Safe Routes to School

MDT serving you with pride

GUIDEBOOK

Montana Department of Transportation

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INTRODUCTION

Safe Routes to School is a process to make it safe, convenient, and fun for children to walk or bicycle to school.

SRTS programs rely on strategies associated with the 5E's:

Evaluation
Education
Encouragement
Enforcement
Engineering

Safe Routes to School (SRTS) efforts across the country are bringing schools and communities together to make walking and bicycling to school safer and improve the health of our children. This Guidebook discusses elements of successful SRTS programs and shows how Montana's SRTS Program can help you make a difference in the quality of life for children and in school neighborhoods. When you finish reading this Guidebook, you will be able to bring the right people together to develop and successfully implement SRTS in your community.

The overriding goal of SRTS is to increase the number of students that walk or bicycle to school along safe routes. Meeting this goal is critical to the health and welfare of our children. Increasing numbers of youth are becoming overweight and at risk for serious diseases stemming from inactive lifestyles. The safety of children on school routes is also threatened by the lack of facilities for walking or bicycling, unsafe street crossings, speeding traffic and congestion around schools, and the possibility of crimes against children.

This Guidebook is not intended to be an exhaustive reference for all aspects of student pedestrian and bicyclist safety. Instead, it highlights and briefly discusses key steps in the development of SRTS plans and offers suggestions you may find useful for your SRTS efforts. The Guidebook will help you identify problems and develop workable solutions to address locations or conditions along school routes that pose safety hazards for children walking or bicycling to school. Your chances for success will increase if you make use of the SRTS resources and tips found in this Guidebook.

Montana's Safe Routes to School Program, administered by the Montana Department of Transportation (MDT), can help you make positive changes in your community and allow parents and children in grades K-8 to choose a safer and healthier way to get to school.

WHY DO WE NEED SRTS?

Simply stated, we need SRTS to help improve the safety and health of our school children. Over the last several decades, researchers have discovered significant decreases in physical activity and fitness levels among children and alarming increases in obesity among children and health problems associated with being overweight. Statistics show the same general trends and health concerns exist among Montana's youth. Sedentary lifestyles and our dependence on motor vehicles as the principal means of getting children to and from school (and elsewhere) are often cited as causes of these disturbing trends.

SRTS programs can help change behaviors, instill healthy habits for a lifetime,

and remove barriers or unsafe conditions that inhibit physical activity. They provide children, parents, and school staff with information about the benefits of walking and bicycling to school and how to create social and physical environments that support walking and bicycling. We need SRTS programs because:

- Children are healthier when they are physically active every day. Walking and bicycling to school are effective forms of exercise.
- Children are safer when they have safe places to walk or bicycle to school.
- Traffic conditions often pose safety concerns when children are dropped off and picked up at school each day.
- Children need to learn how to walk and bicycle in a safe and responsible manner. Without such skills, children are at risk whenever they walk or bicycle. Children who seldom walk don't learn the fundamentals of traffic awareness and may eventually become drivers who don't understand pedestrian safety or respect bicyclists on our streets and roadways.

DESIRED OUTCOMES OF MONTANA'S SRTS PROGRAM

MDT expects to receive about $5 million in federal funding over the next several years that will be made available to Montana communities to encourage more elementary and middle school children to walk or bicycle to and create safer and more enjoyable routes to school. This investment in SRTS is expected to produce many beneficial outcomes in Montana communities including:

- Increased bicycle, pedestrian, and traffic safety
- More children walking and bicycling to and from schools
- Decreased traffic congestion
- Improved childhood health
- Reduced childhood obesity
- Encouragement of healthy and active lifestyles
- Improved air quality
- Improved community safety
- Reduced fuel consumption
- Increased community security
- Enhanced community accessibility
- Increased community involvement
- Improvements to the physical environment that increase the ability to walk and bicycle to and from schools
- Improved partnerships among schools, local municipalities, parents, and other community groups, including non-profit organizations
- Increased interest in bicycle and pedestrian accommodations throughout a community

These outcomes are all relevant goals for your SRTS program and can help direct SRTS activities and projects in your community. These outcomes also support national efforts to increase the amount of walking and bicycling and to make these activities part of our lifestyle. The *National Bicycling and Walking Study*, prepared by the U.S. Department of Transportation in 1994, identified two major goals:

- Doubling the percentage of total trips made by walking and bicycling; and
- Reducing the number of bicyclists and pedestrians killed or injured in traffic crashes by 10%.

The *Healthy People 2010* report, prepared in 2001 by the Centers for Disease Control and Prevention (CDC), identified various objectives for increasing levels of moderate and vigorous physical activity among adolescents and increasing the proportion of trips made by walking and bicycling. The report listed two objectives for children between the ages of 5 and 15 years old who regularly walk or bicycle to school:

- To increase the percentage of children five- to 15-years old, who live within one mile of school and regularly walk to school, from 30% to 50%; and
- To increase the percentage of children five- to 15-years old, who live within two miles of school and regularly bicycle to school, from 2.4% to 5%.

SRTS offers ways to help meet these national goals and objectives by changing behaviors to ensure:

- The community, especially parents and school officials, believes in the value of walking and bicycling to school and encourages children to do so.
- The community considers the safety needs of children walking or bicycling in their neighborhoods when planning for residential and school areas.
- Streets and roads in the community are designed to encourage walking and bicycling, with sidewalks, bicycle paths or bicycle lanes, and traffic-calming measures.
- Drivers are educated to understand behaviors of child pedestrians and bicyclists and how safe driving can decrease traffic congestion and reduce the risk of injuries to children.
- Children and parents understand how to walk and bicycle safely and assertively.
- Officials enforce laws that support and protect walkers and bicyclists.

SCOPE OF SRTS PROGRAMS

SRTS programs help change behaviors by combining aspects of health, fitness, traffic relief, environmental awareness and safety. Comprehensive and effective SRTS programs typically include **EVALUATION, EDUCATION, ENCOURAGEMENT, ENFORCEMENT**, and **ENGINEERING** strategies. These strategies (sometimes called the **5E's**) are described below:

EVALUATION: Collecting data and assessing existing conditions to identify

potential problems and collecting data after SRTS activities are introduced to measure the success of your efforts.

EDUCATION: Teaching children about the broad range of transportation choices, instructing them in important lifelong bicycling and walking safety skills, and launching driver safety campaigns in the vicinity of schools. Educational components are also often directed at parents and drivers.

ENCOURAGEMENT: Using events and activities to promote walking and bicycling.

ENFORCEMENT: Partnering with local law enforcement to ensure traffic laws are obeyed in the vicinity of schools (this includes enforcement of speeds, yielding to pedestrians in crossings, and proper walking and bicycling behaviors), and initiating community enforcement, such as crossing guard programs.

ENGINEERING: Making operational changes or physical improvements to the infrastructure around schools to reduce speeds and conflicts between with motor vehicle traffic, and establish safer and fully accessible crossings, walkways, trails and bicycle facilities.

Although each strategy can be implemented by itself, the most successful SRTS programs combine multiple strategies. By directly or indirectly incorporating some or all of these strategies, SRTS programs offer parents a chance to work in partnership with their children's school, the community, local governments to create a healthy lifestyle for children and a safer environment for all.

Montana's SRTS Program offers funding through a competitive application process for non-infrastructure and infrastructure projects within a 2-mile radius of schools serving children in grades K-8.

SRTS PLANNING PROCESS

SRTS programs are developed and implemented through the preparation of a Safe Routes to School Plan. The SRTS Plan typically addresses specific conditions within a municipality, district or school with respect to children's travel to and from school. SRTS plans not only address physical infrastructure needs such as sidewalks and roadway crossings, but also concerns about safety and health. SRTS plans or programs may range from simple to complex; however, a typical planning process includes the following steps:

- Finding a Program Champion and Organizing a Team
- Gathering Data and Identifying Issues
- Developing a Vision with Goals and Objectives
- Developing and Implementing a Plan
- Evaluating & Monitoring Results

These steps are discussed in more detail later in this Guidebook. It's time to find out more about SRTS!

Non-infrastructure (or behavioral) projects generally include activities associated with **EDUCATION**, **ENCOURAGEMENT**, **ENFORCEMENT** and **EVAUATION** strategies. Infrastructure projects are focused on specific facilities (crosswalks, sidewalks, and pathways) associated with the **ENGINEERING** strategy.

WHAT YOU CAN FIND IN THIS GUIDEBOOK

This Guidebook provides technical assistance for schools and communities in Montana interested in establishing SRTS programs. Whether your school or community is new to the idea of SRTS or you have already identified problems and started working towards a plan, this Guidebook will help your efforts. This document is organized into chapters devoted to various aspects of SRTS and provides:

- an overview of SRTS and why it's needed in our communities;
- guidance on how to start a program and establish goals;
- ways to identify and document conditions limiting walking and bicycling to school;
- ideas to educate and encourage safer walking and bicycling;
- descriptions of different types of physical improvements that may create safe walking and bicycling routes to your school;
- enforcement ideas to change hazardous driver behaviors; and
- ideas to help you fund and implement SRTS activities and projects.

This Guidebook outlines a proven process for developing and implementing SRTS plans. It highlights resources here in Montana you can access and use to support SRTS efforts in your community or school. We'll even give you some tips for completing our SRTS funding application.

Not all of the ideas presented in this Guidebook have to be applied—they are only suggestions and best practices based on national and international experiences with SRTS. There is no right or wrong way to apply SRTS in your school or community and your plans or programs can range from simple to complex.

Keep in mind that your efforts and accomplishments will make a difference in the health and safety of children at your school and in your community!

CHAPTER 1: BACKGROUND

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THE PROBLEM – CHILDREN DON'T WALK OR BICYCLE TO SCHOOL

Information from the CDC reveals that only about one-third of the students living within a mile of school walk to school each day as compared to 87% in 1969.

Most of us have fond memories of walking or bicycling to school as kids. Less than 40 years ago, nearly half of all 5 to 18 year olds walked or bicycled to school. According to national statistics from the Centers for Disease Control and Prevention (CDC), only 16% of school children walked or bicycled any distance to school in 2001. [1] The vast majority of all trips to and from school each day are by bus or private vehicles. Nationally, more than one-fourth of all morning traffic consists of parents or other family members driving children to school. Similar observations can be made in many Montana communities each school day.

The reasons behind this shift in transportation in just over a generation's time are complex. Schools are often situated on the outskirts of town instead of in the neighborhoods where we live. Information from the CDC reveals that just 20% of students now live within a mile of school as compared to 35% in 1969. Only about one-third of those who live within a mile of a school walk, compared to 87% who walked to school each day in 1969.

Other factors than just the distance to schools contribute to the decline in walking and bicycling to school. In a 2004 nationwide survey by the CDC, parents were asked to help identify barriers that prevent them from allowing their children (aged 5-18 years) to walk to school. Parents listed traffic-related dangers along school routes, weather conditions, fear of crimes against children, and even school policies that prohibit walking or bicycling as reasons for not allowing their children to walk to school in responses to the CDC survey.[1] Working parents without the time to walk their children to school like knowing their kids are safely delivered by car or on the school bus.

WHY SHOULD CHILDREN WALK OR BICYCLE TO SCHOOL?

More and more American children are overweight and fewer American children meet minimum fitness standards. Children are developing a sedentary lifestyle at an earlier age. Walking and bicycling to and from school are simple ways to put daily exercise back into children's lives, help build a healthier younger generation, and encourage healthy habits for a lifetime.

Walking or bicycling to school gives children a sense of freedom and helps children learn important developmental skills like independence and responsibility. It

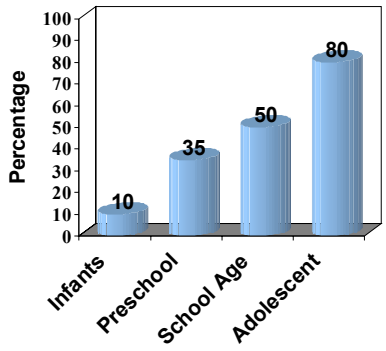
helps children acquire traffic skills critical to their own well being along roadways and get to know their own neighborhoods and community. Walking and bicycling also helps children to arrive at school alert and ready to learn. These issues are discussed in more detail in the following sections.

PHYSICAL INACTIVITY POSES SIGNIFICANT HEALTH RISKS

Why should we care?
This generation of children may be the first generation not to outlive their parents due to unhealthy lifestyles.

The 1996 Surgeon General's report *Physical Activity and Health* outlined the benefits of regular physical activity during childhood as a way to address several health issues. These include weight control; building lean muscle; reducing fat; building and maintaining bones, muscles, and joints; reducing feelings of depression and anxiety; and preventing and reducing the development of high blood pressure. Physical inactivity is one of the risk factors contributing to the prevalence of childhood obesity in the United States. While excess weight creates negative health consequences for Americans of all ages, it is particularly devastating for children.

% Overweight Children Who Become Obese Adults



Preventive Medicine 1993; Vol. 22:pp. 167-177
Archives of Pediatric & Adolescent Medicine
Vol. 158 May 2004 pp. 449-452

Overweight children face notable immediate health risks and are more likely to become overweight adults and to face ongoing health risks as a result. Being overweight or obese increases the risk of many diseases and health conditions including hypertension, Type 2 diabetes, coronary heart disease, stroke, gall bladder disease, osteoarthritis, sleep apnea or respiratory problems and some types of cancer. Overweight children may also suffer from low self esteem or depression due to social stigmas and discrimination among peers. [2]

Statistics paint a disturbing picture of the extent of obesity in the U.S. Between 1980 and 2000, obesity among adults rose significantly and data from the National Center for Health Statistics show that 30% of U.S. adults 20 years of age and older were obese in 2000. The percentage of overweight young people more than tripled over the 1980-2000 period. Among children and teens aged 6–19 years, 16% (accounting for over 9 million young people) were considered overweight in 2000.

Increasing daily levels of physical activity through walking and bicycling is one step toward reversing this alarming trend. Physical activity is essential for children and youth to promote healthy growth and development. Walking and bicycling are ideal ways for children to get regular exercise and to establish healthier lifelong travel habits. Regular physical activity develops cardiovascular fitness, strength, and flexibility and also nurtures confidence and self esteem.

WALKING OR BICYCLING HELPS PROMOTE INDEPENDENCE

An increasing share of all school children are transported to school each day by their parents or other family members. Driving children to and from home to school limits the opportunities for them to interact with their neighborhood and

other children. As a result, children don't learn to negotiate traffic as walkers or bicyclists and don't gain fundamental skills needed to make independent decisions. Dependence on car travel may also negatively limit some school children from participation in extra-curricular activities.

Several studies have shown a strong connection between increased activity and levels of alertness...

Walking and bicycling to school presents opportunities for children to explore the world and experience an increasing amount of independence and responsibility. Such experiences are an essential part of children's healthy mental and emotional development. Gaining experience by making their own decisions helps children learn how to act responsibly and how to assess the unfamiliar people or environments they may encounter. Walking and bicycling to school also allows children to experience their community and become aware of their neighbors and neighborhoods.

PHYSICAL ACTIVITY BENEFITS ACADEMIC ACHIEVEMENT

Moderate to vigorous physical activity positively affects academic performance and skill development. Individuals have been shown to have improved concentration, enhanced memory and learning, enhanced creativity, better problem solving ability and improved mood for up to two hours following exercise. Although research has not been conducted to conclusively demonstrate a direct link between physical activity and improved academic performance, research suggests such a link.

Several studies have shown a strong connection between increased physical activity and increased levels of alertness, mental function and learning, and improved mood and behavior.

The CDC's *Physical Activity and Health: A Report of the Surgeon General,* published in 1996, documented studies suggesting that participation in physical activity increases adolescents' self-esteem and reduces anxiety and stress. A 2002 California Department of Education study provided "compelling evidence" that fifth-, seventh- and ninth-grade students who are physically fit perform better in the classroom. In this study, the more fitness standards that a child met, the higher they tended to score on both reading and math standardized tests. Another study found that a physical education program consisting of both in school and out of school components resulted in a substantial increase in standard academic achievement scores among a group of fourth and fifth grade students.

This information suggests that walking and bicycling to school may be a way to help ensure children arrive alert and ready to learn.

WALKING AND BICYCLING HELPS DECREASE CONGESTION

Whether we realize it or not, driving our children to school contributes significantly to daily traffic volumes on school routes and traffic dangers around schools. Driving children to school often results in two vehicle trips: one to the

school and one returning home, accounting for up to four additional vehicle trips per day. Recent research suggests between 20 to 30% of morning automobile traffic can be attributed to parents driving their children to school. [3][4] Traffic rules and regulations are often ignored as parents attempt to drop off or pick up their children as close as possible to the school. Parents and caregivers often stop and wait in inappropriate areas, make U-turns, back up into crosswalks, and park illegally to be more conveniently located near the school. These erratic driving behaviors increase the potential for conflicts between automobiles and children who are walking and biking to school.

As the percentage of children walking and bicycling to school continues to decrease and motor vehicle traffic increases, parents become more convinced that it is unsafe for their kids to walk or bicycle. Parents may not recognize that by driving, they contribute to the traffic congestion and often endanger their own and other children when they come to and leave school.

ENVIRONMENTAL BENEFITS

SRTS programs can indirectly help to reduce automobile emissions and associated health concerns by encouraging walking and bicycling to school. In numerous cities across the U.S., automobile emissions are recognized as significant sources of air pollution and the personal automobile may be the single greatest polluter. [5] Although pollution control measures have helped to reduce vehicle emissions, the total amount of automobile emissions have continued to rise because the number of total miles driven by vehicle owners continues to increase.

Vehicles emit ozone precursors which are hydrocarbons such as gasoline vapors and nitrogen oxides. Nationwide, vehicle emissions account for 30% or more of the ozone precursors in our air. The CDC cites overwhelming evidence linking ozone and other air pollutants to respiratory ailments in children, including upper respiratory infections and asthma. The CDC also estimates that almost five million children in the U.S. suffer from asthma and that more than 14 million school days were lost nationwide in just one year. [6]

UNSAFE ROUTES TO SCHOOL POSE A RISK TO CHILDREN

Traffic-related danger was the second most common reason identified by parents for not allowing their children to walk to and from school according to annual mail survey of health-related attitudes and behaviors in the U.S. conducted by the CDC. [7]

Statistics compiled by the National Highway Traffic Safety Administration (NHTSA) show that almost 5,700 and 109,000 pedestrians and bicyclists of all ages were killed and injured, respectively, in the U.S. during 2005. [8] This group represented about 5% of all those killed or injured in motor vehicle related crashes in 2005. More than 530 children age 15 and under were killed and an estimated 34,000 were injured while walking or bicycling during 2005. [8]

NHTSA statistics for 2005 identify other interesting trends regarding motor vehicle crashes involving pedestrians and bicyclists including[9][10]:

- In 2005, nearly one-fifth (18%) of all children between the ages of 5 and 9 who were killed in traffic crashes were pedestrians. Children age 15 and younger accounted for 8% of the pedestrian fatalities in 2005 and 28% of all pedestrians injured in traffic crashes.
- Forty-three percent of the pedestrian fatalities (under age 16) occurred in crashes between 3 p.m. and 7 p.m.
- Most pedestrian fatalities occurred in urban areas, at non-intersection locations, in normal weather conditions, and at night.
- More than two-thirds (70%) of the pedestrians killed in 2005 were males.
- Bicyclist deaths accounted for 2% of all traffic fatalities, and bicyclists made up 2% of all the people injured in traffic crashes during the year.
- Bicyclists under age 16 accounted for 18% of all bicyclists killed and 35% of those injured in traffic crashes in 2005. Nearly one-fifth (17%) of the bicyclists killed in traffic crashes in 2005 were between 5 and 15 years old.

Being inside a motor vehicle while parents driving their children to school does not ensure safety. The NHTSA indicates that motor vehicle crashes are the leading cause of death for school-age children. [11] Statistics show that during 2005, 1,784 children ages 15 and under were killed and 236,000 children were injured as motor vehicle occupants. [8]

Injuries and fatalities can be reduced or avoided if school routes are made safer, through a combination of physical improvements, education to teach children and drivers about safe behaviors, and enforcement to ensure drivers follow safe driving rules.

DO WE HAVE A PROBLEM IN MONTANA?

Health statistics suggest Montana's youth and adolescents are at risk due to sedentary behaviors just like other places in the country. As elsewhere, economic and cultural changes have affected our livelihoods and lifestyles, changed our community development patterns, and increased our dependence on the automobile for transportation.

While Montana has one of the highest percentages of adults in the nation that meet or exceed the minimum physical activity requirements, statistics show that more than 40% of Montana adults are not meeting minimum physical activity guidelines and 20% are completely sedentary. The *2006-2010 Montana Nutrition and Physical Activity State Plan to Prevent Obesity and Other Chronic Diseases* indicates that 37% of Montana adults are overweight and 20% of Montana adults are obese. A link to this important public health plan can be found in **APPENDIX A**.

The CDC's Youth Risk Behavior Surveillance System (YRBSS) generally monitors six categories of priority health-risk behaviors among students in grades 9–12 across the U.S. The YRBSS helps monitor the prevalence of behaviors that not

only influence the health of our youth, but also put youth at risk for the most significant health and social problems that can occur during adolescence and adulthood. According to the YRBSS data for 2005, 9% of Montana students in grades 9–12 are overweight, and an additional 13% are at risk of becoming overweight. Public health officials recommend that children and teens should accumulate between 30 to 60 minutes of moderate-to-vigorous physical activity every day.

The YRBSS revealed that more than 31% of Montana high school students indicated they had not participated in any moderate physical activity on three days or more of the previous week and had not participated in at least 30 minutes of moderate physical activity on five days or more during the previous week. Eight percent of the respondents stated they did not participate in any moderate-to-vigorous physical activity. More than 26% of high school students also indicated they watched three or more hours of television each school day in 2005.

Did you know?
During 2005, about 11% of all traffic crashes resulting in pedestrian fatalities and injuries in Montana involved children between 5 and 14 years of age.

Although only 23% of the pedestrian crashes occurred outside the city limits of Montana communities during the last 10 years, more than 46% of all fatal crashes involving pedestrians occurred in rural locations.

Intersections or crosswalks are the most common sites for traffic crashes involving pedestrians in Montana.

Data on health risk behaviors for children in grades K-8 is limited. However, the Montana Office of Public Instruction conducted a voluntary Youth Risk Behavior Survey among all public and private schools with students in grades 7 and 8 during 2005. [12] One hundred and forty-nine schools in Montana elected to participate in the survey and 80% of the students in these schools (representing nearly 9,200 students) volunteered to participate. While the survey was not random, the responses illustrated several health-risk behaviors of concern among 7th and 8th grade students in Montana including:

- Almost 70% of the respondents reported they seldom or never wear a helmet while bicycling.
- Fifty-five percent of 7th and 8th grade respondents indicated they watch TV for two or more hours each day.
- Only about 15% of the respondents met the nationally recommended level of 30 to 60 minutes of moderate-to-vigorous physical activity every day.
- Only 45% of the respondents were physically active for 60 minutes on 3 of the 7 days prior to the survey.

The Montana Office of Public Instruction can provide Youth Risk Behavior Surveillance System data for your school or community through the links provided in APPENDIX A.

The frequency of motor vehicle crashes involving pedestrians and bicyclists in Montana is considerably below the national average. Nationally, pedestrian and bicycle fatalities accounted for almost 13% of all traffic fatalities in 2003. During the same period in Montana, the number of pedestrian and bicycle fatalities accounted for less than 5% of all traffic fatalities in Montana.

During 2005, Montana recorded a total of 251 traffic fatalities including 13 pedestrian fatalities and 4 bicyclist fatalities. According to NHTSA statistics for 2005, Montana's pedestrian fatality rate of 1.39 fatalities per 100,000 population was below the national average of 1.65. The state's bicyclist fatality rate (4.28 cyclist fatalities per million population) was 1.6 times the national average rate for 2005. While relatively few fatalities are recorded each year in Montana,

it's important to remember that traffic still poses a risk to pedestrians and bicyclists (including children walking or bicycling to school) each day.

Specific crash data in your community can be obtained by contacting the State Highway Traffic Safety Office at 406-444-3298.

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CHAPTER 2: BRIEF HISTORY OF SRTS

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SRTS BEGINNINGS

The Safe Routes to School concept has its origins in Denmark. During the 1955 through 1971 period, Denmark had the highest rate of child mortality due to road accidents in Western Europe. Out of a concern for the safety of school children walking and bicycling to school, the City of Odense implemented a program in the early 1970s to examine the routes children used for trips to and from school. Through this study, proposals to improve the traffic environment along routes used by school children were identified and implemented for some 45 schools in Odense. In just a decade, pedestrian and bicyclist injuries fell by more than 80 percent. As a result of these efforts, Denmark soon established what is believed to be the first national SRTS program based on the success experienced in Odense.

Traffic calming, an important element of current SRTS programs, was also initiated by other European countries simultaneously with Danish SRTS efforts. "Traffic calming" involves physical changes to streets that reduce the negative effects of motor vehicle use and improve conditions for non-motorized street users. Many traffic calming measures developed in the Netherlands directly benefit children and increase safety for those walking and bicycling.

During the 1980s, efforts began in England to increase safety for children walking and bicycling to school. In 1995, a group called Sustrans started Safe Routes to Schools pilot projects for ten schools. Bicycle use tripled and significant reductions in injuries to child pedestrians and bicyclists were realized in just two years after the implementation of the pilot projects.

About the same time, SRTS programs were being developed in Australia, New Zealand and Canada. One of the Canadian programs, developed in British Columbia, involved a diverse group of stakeholders to create SRTS programs that included education, encouragement, enforcement, and engineering components. This "model" has become a standard for many SRTS programs in the U.S.

SRTS PROGRAMS IN THE U.S.

Although safety patrols and crossing guards were commonly used in the U.S. throughout the 1960s and 1970s, the first SRTS programs were not implemented until 1997. The first SRTS program in the U.S. was started in New York City followed by a pilot SRTS program in the State of Florida later the same year. The program in the Bronx relied upon mapped crash data in the vicinity of 38 schools and knowledge of city engineering staff and parents to help identify ways to make school routes safer. The Florida Safe Ways to School program was a pilot study at ten schools and was co-sponsored by the state Departments of

Transportation and Education. During the same year, the Mayor of Chicago initiated the first Walk to School Day. The popularity and success of the Chicago event led to the national Walk to School Day we know today.

In 1999, Rep. James Oberstar of Minnesota, ranking member of the Transportation and Infrastructure Committee and a committed cyclist, urged the Federal Highway Administration (FHWA) to fund pilot Safe Routes programs in Arlington, Massachusetts and Marin County, California. Federal funding was secured through the NHTSA in August 2000 for the pilot projects.

Both programs were highly successful. On average, biking and walking increased by 13% in the three pilot schools in Arlington. In Marin County, a 64% increase in walking and a 114% increase in bicycling were realized at the involved schools after just one year of the program. In 2002, a "Safe Routes to School Toolkit" based on the Marin County program was published by the NHTSA. The toolkit is widely recognized throughout the U.S. as a valuable and flexible "how to" resource for those wishing to create a SRTS program.

Within a year of the startup of the two NHTSA pilot programs, local SRTS efforts had started in at least 14 states and several states developed their own programs. However, most local SRTS programs lacked funding. The success of the pilot projects and numerous local SRTS efforts generated interest in establishing a federally funded SRTS program in the U.S.

Efforts to build momentum for a national SRTS program were led by numerous pedestrian and bicyclist advocacy groups. Bicycle, pedestrian and health groups, led by the League of American Bicyclists, began meeting to form a new coalition called the Safe Routes to School National Partnership. The Partnership wanted to ensure a structure for advancing the goals of a national SRTS program would be in place when the federal transportation bill was reauthorized.

The Federal-aid SRTS Program was created by Section 1404 of the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act* (SAFETEA-LU), signed into law on August 10, 2005. The SRTS Program as funded provides Federal-aid highway funds to State Departments of Transportation (DOTs) over fiscal years 2005 through 2009, in accordance with a formula specified in the legislation. The legislation also required each state to hire a full-time SRTS coordinator and mandates the development of a new SRTS Clearinghouse to provide information and educational materials for programs throughout the U.S. The federal SRTS Program is administered by the FHWA's Office of Safety.

SAFETEA-LU also contained about $4.5 billion for pedestrian and bicycle programs—nearly doubling the amount of funds for such programs under the previous transportation bill (TEA-21) signed in 1998.

SRTS ACTIVITIES IN MONTANA

Although a formalized statewide SRTS program was not implemented until re-

cently, a variety of activities and programs aimed at pedestrian and bicycle safety have occurred and continue to occur in Montana communities and at individual schools. Some examples of these activities or programs are highlighted below.

International Walk to School Day Participation

International Walk to School Day is a special event that began in 2000, following several successful walk to school campaigns held in the United Kingdom, Canada, and in the U.S. International Walk to School Day, held annually in early October, brings children and adults together to celebrate walking to school. Although organized around a special event, International Walk to School Day is intended to help encourage physical activity among children and help promote the safety of the walking and bicycling environment around each school.

During 2006, some 36 schools in 21 large and small communities across Montana officially participated in the event according to the official website. Participating schools often have special events planned for the day, like providing a nutritious breakfast for children and parents. Schools often organize walking school buses from designated locations.

For example, Helena has participated in the annual Walk to School Day since 1999. Organizers succeeded in increasing school participation in the walk from one Helena elementary school in 1999 to 10 in 2004, with approximately 1,200 students participating in the walk. Participating Helena elementary schools have used Walk to School Day as a way to raise awareness of the lack of sidewalks in their school neighborhoods and have successfully encouraged the city to make school crosswalk improvements.

Great Falls Student Safety Plan

The City of Great Falls recently completed a detailed student safety plan for 27 elementary, junior high and high schools within the community. The overall goal of the project was to establish safe, efficient and convenient mobility for both vehicles and pedestrians by correcting traffic safety problems, addressing major obstacles/conflict areas, and applying principles of traffic engineering. During the project, data was collected and analyzed to identify problems and help develop recommendations to address a variety of issues around each school site. Suggested plans and project level cost estimates were also developed to assist the City implement recommendations.

SRTS Workshops With Mark Fenton (Helena/Missoula/Billings)

A public workshop aimed at helping Montanans make communities more pedestrian and bicycle friendly was conducted in Helena during June 2006. The workshop was sponsored by the Montana Nutrition and Physical Activity Program at Montana State University, the City of Helena, Blue Cross Blue Shield of Montana, and MDT. Mark Fenton, a nationally-renowned expert on walking for health, facilitated the workshop. Mr. Fenton is a certified instructor and member of the team responsible for developing the Safe Routes to School National Course.

The Helena workshop focused on features of walkable communities, the health-related effects of sedentary lifestyles, and ways to create safe walking and bicycling routes to schools. One of the workshop sessions focused specifically on SRTS issues around Smith School, located in a Helena neighborhood lacking a continuous network of sidewalks.

In October 2006, MDT kicked off its statewide SRTS program with half-day workshops in both Missoula and Billings. The free workshops, facilitated by Mark Fenton, provided basic training to individuals interested in developing a SRTS program in their communities and featured overviews of why SRTS is needed, typical program elements, and successful practices from around the country. The workshops included visits to local elementary schools to observe morning arrivals or departures of students followed by a group "brainstorming" session to identify and discuss ideas for addressing observed problems or issues at each school. The workshops were attended by interested community members, local government staff and law enforcement personnel, and school representatives.

Mapping Safe Routes in Missoula and Lolo

Technology has helped map the safest routes for students walking to and from Russell Elementary School in Missoula. During 2004, researchers from the University of Montana organized a group of Russell Elementary School students to identify their walking routes with Global Positioning System (GPS) devices. GPS data on walking routes, along with other information about busy intersections, missing sidewalks and other obstacles was analyzed and used to identify the four safest routes for students in Russell School's attendance area.

Similar route finding projects were done for Lowell and Franklin Elementary Schools during 2006. Missoula's Safe Routes to School Steering Group (a group of city staff, law enforcement, University of Montana and Missoula County Public Schools officials and parents) has a goal of getting routes to all Missoula schools mapped out by 2011.

A project using satellite imagery and GIS technologies was conducted in Lolo to help students assess the safest route to use to get to school. U.S. Highway 93 runs directly through the heart of Lolo and most students must cross the busy road to get to school. Fifth graders were trained to use ArcView software and after becoming comfortable with the software, they were paired with a kindergarten student, and together, they traced their routes to school on aerial photography and determined whether it was the safest route to take.

"Footloose Fridays" at Lewis & Clark Elementary School (Missoula)

Two parents of students attending Lewis & Clark Elementary School in Missoula familiar with International Walk to School Day, decided to expand it beyond just one day out of the year. During 2002-03, they recruited volunteers and organized a "walking school bus" that ran once a month in the neighborhoods surrounding school. The following year, the Lewis & Clark Elementary School PTA expanded the Walking School Bus Program to once per week. The program was named "Footloose Fridays" and parent volunteers operated walking school busses on four routes.

CHAPTER 3: GETTING STARTED

CHAPTER 3: GETTING SRTS STARTED

Starting a SRTS program is easier than you might expect. Each day, parents and school staff strive to ensure children arrive at school and return home again safely. School staff and many parents also recognize that children need more daily exercise. Most adults today can remember walking or bicycling to school in their own childhoods and have pleasant memories of the experience. Recognize that these attitudes and experiences represent "common ground" for beginning SRTS programs and building interest in SRTS.

Like all tasks that may seem overwhelming at first, starting SRTS is easier if you take it step-by-step. This Chapter discusses the initial steps for starting SRTS programs and organizing a team to help develop a plan of action. Although you can tailor your SRTS program to fit your own school and community, beginning a program usually requires that you:

To get SRTS efforts started, one or more persons in your community must believe in these issues strongly enough to want to take action and serve as a champion.

- FIND A CHAMPION(S)
- MEET WITH PRINCIPALS, POLICE, AND PARENTS
- INVOLVE PUBLIC OFFICIALS
- IDENTIFY STAKEHOLDERS
- HOLD A KICK-OFF MEETING AND ORGANIZE A SRTS TEAM

Each of these steps is described in more detail on the following pages.

FIND A CHAMPION(S)

SRTS programs require people who want to change conditions that pose safety concerns for children walking and bicycling to school or have a desire to help children and parents recognize the health benefits of more active lifestyles. To get SRTS efforts started, one or more persons in your community must believe in these issues strongly enough to want to take action and serve as a champion.

Champions are often one or two parents who want to ensure a safer environment for their own children. However, champions can also be a principal or other school administrator, teachers, law enforcement personnel, or someone from a PTA/Parent Council. Many times, champions are avid walkers or bicyclists who through their own travel behaviors want to set a positive example for SRTS efforts.

From the start, someone has to take the lead and arrange, coordinate, and manage activities for the SRTS project. The project champion(s) has the responsibility to get others involved and delegate tasks.

MEET WITH THE PRINCIPAL, POLICE AND PARENTS

A critical first step in developing an SRTS program is to meet with key "players" — the Principal, Police, and Parents.

A critical step in developing a SRTS program or event is forming partnerships. Meet with the key "players"— Principals, Police, and Parents. Successful programs and events must have the support and participation of the principal, police and parents. The school principal must be willing to commit the necessary school time and resources to help develop programs or events. Local law enforcement agencies are a valuable resource and can help educate and ensure that safety is a priority. Parents and parent groups affiliated with your school can help supply the energy and enthusiasm needed to make SRTS programs and activities work.

INVOLVE PUBLIC OFFICIALS

If you hope to make physical changes on roads and streets near schools, you must involve local officials. Repairs to streets or sidewalks near the school or the installation of new facilities can sometimes be accomplished quickly because of partnerships with public officials and other community leaders. Public officials can be valuable members of a SRTS Team since they can often access technical staff or resources and may have knowledge of local plans or programs that can help support SRTS.

IDENTIFY STAKEHOLDERS AND POTENTIAL TEAM MEMBERS

Project champions need a core group of people to help with the project. Our communities include many people who potentially share a common interest in making walking and bicycling to school safer and more appealing to children. Identifying these people and bringing them together in a small working group will help generate the interest and enthusiasm needed to develop a SRTS program.

Stakeholder involvement is essential to crafting policies, programs and projects that not only accomplish SRTS goals and objectives, but enjoy broad community support.

Project champions need to identify and contact stakeholders – people potentially interested in or affected by the implementation of a SRTS program. Typical stakeholders include representatives from the schools, the community, and local government. They often possess the knowledge and expertise needed to address many issues that arise during the development of a SRTS program. Stakeholder involvement is essential to crafting policies, programs and projects that not only accomplish SRTS goals and objectives, but enjoy broad community support.

Typical stakeholders (and potential members of SRTS Teams) are listed below:

<u>School Stakeholders</u>

- School Principal or Assistant Principal
- Several parents and students
- Teachers or other staff (Physical Education teachers or other staff who work outside and observe before and after school activities and transportation)
- PTA/Parent Council representative

- School nurse or other health representative
- School district transportation director
- Adult school crossing guards

Community Stakeholders
- Community groups
- Neighborhood groups
- Local business owners
- Local pedestrian, bicycle and safety advocates
- Senior groups

Remember that your chances for a good turnout increase if you make the meeting date, time, and place as convenient as possible for everyone.

Local Government Stakeholders
- Elected officials
- Transportation/traffic engineer (you may need someone with technical skills)
- City/county planners
- Public health professional
- Public works representative
- Law enforcement personnel
- State or local pedestrian and bicycle coordinators

Ideally, program champions should identify between eight to twelve people from these stakeholder groups to serve on a SRTS Team. Although more people could be included, large groups can be difficult to manage. SRTS Teams can be smaller, but greater workloads for team members can be expected.

HOLD A KICK-OFF MEETING AND ORGANIZE A SRTS TEAM

Once a list of stakeholders (with names, phone numbers, mailing and e-mail addresses) has been compiled, it's time to organize a Kick-Off meeting. Invite each person on the stakeholder list to attend the Kick-off meeting. The invitation letter should briefly explain the purpose of the meeting and what you hope to accomplish. Ask those contacted to reply about whether or not they plan to attend the meeting so a meeting room of sufficient size can be reserved.

SRTS efforts should be authorized by school administrators or local governments with budget-setting authority. Holding the meeting at the school is also a good idea—but remember to coordinate meetings with the school administrators to secure a meeting place. To ensure your best chances of getting people to attend, consider providing child care during the meeting and mention that such services are available in the invitation letter.

A sample invitation letter is provided in **APPENDIX B.** Invitation letters should be mailed three or four weeks before the Kick-off meeting so people have sufficient advance notice and make plans to attend. Remember that your chances for a good turnout increase if you make the meeting date, time, and place as convenient as possible for everyone. You can also help ensure a good turnout if you call invitees a few days ahead of the meeting.

Realize and recognize that not everyone will attend your meeting or want to be part of a SRTS Team. However, it's important to keep all the people you've contacted on your mailing list since you may need their help in the future.

WHAT SHOULD YOU TALK ABOUT AT THE KICK-OFF MEETING?

There are generally two goals for the meeting – to create a collective "vision" of what can be accomplished through the SRTS effort and to formulate a plan for moving forward to realize that vision. Because you're attempting to generate interest and enthusiasm in the project, be well prepared for the meeting. Being prepared will likely require homework, contacting others for information, and assembling reference materials.

You should talk about the following items at the meeting:

- **The current situation and opinions on safety concerns.** Describe the traffic problems experienced at the school and the difficulties children face on their way to and from school. Give participants a chance to talk about their safety concerns and keep a running list of problems and ideas for solutions.

- **National or statewide trends that support the need for SRTS.** Talk about the growth in traffic, the decline in walking and bicycling among youth, and concerns for children's health.

- **Explain how the SRTS project will work and describe the likely benefits for children, parents, staff and the community.** Provide a presentation on Safe Routes to School programs including issues and strategies related to engineering, enforcement, education, encouragement and evaluation. This Guidebook presents much of this information and includes sources for additional information.

  PowerPoint presentations about SRTS programs suitable for use at a Kick-off meeting have already been developed by Montana's SRTS state coordinator and the CDC. Copies of the SRTS presentations developed for Montana's SRTS program can be obtained by contacting the state coordinator at 1-877-935-7233.

  The CDC's PowerPoint slide presentation and supporting materials discussing walking and bicycling to school can be downloaded from their website by going to:
  http://www.cdc.gov/nccdphp/dnpa/kidswalk/resources.htm#presentation

  The CDC's supporting materials include a lesson plan, presentation guide and even a script to use when showing the presentation.

- **Ask participants to share their vision for what the school could be like in five years.** Try to focus on what would they like to see done or have in place instead of just what's wrong.

- **Establish a focus.** The group needs to determine if it wants to plan for SRTS at a single school or multiple schools in a district. Each has potential benefits. A school-specific group could work on detailed issues relating to that school and dedicate more resources to that one location than a group seeking to create policies and programs that would impact several schools or all schools in a district.

- **Develop a list of goals for your SRTS program.** Discussions at the meeting can be summarized by generating a list of goal statements for SRTS at your school or community. Goal statements don't need to be lengthy or complex. For example, acceptable goal statements might be as simple as: increase the numbers of students walking or biking to school; enhance safety for students walking and bicycling to school; change unsafe pedestrian or bicyclist behaviors among students; or educate parents about health benefits of walking or bicycling. The goals are really up to you and your team to establish. More information about developing your goals and objectives can be found in Chapter 5.

- **Develop a schedule.** Solicit opinions from the group about when they want to see SRTS activities implemented and where priorities should be placed. Establish a schedule for future SRTS Team meetings.

- **Assign responsibilities.** The next tasks in the process and the best way to work toward meeting SRTS goals should be discussed by participants. This may include assigning responsibilities among individual SRTS Team members or forming committees to work on major tasks and allowing members to focus on a specific activity related to their skills and interest.

Some possible assignments for team members or committees and their areas of responsibility are identified in **Table 3-1**.

SOME OTHER CONSIDERATIONS

Existing groups might be able to help implement SRTS. Look for existing groups where a SRTS program might be a good fit, such as a city or school district safety committee, PTA, Community Wellness Council, the city or county health department, or a pedestrian and bicycle advisory board.

Don't forget to involve children from your school. Students who are already walking or bicycling to school are great resources since they usually have good reasons for taking a particular route to school. Their comments and opinions can provide valuable information to the SRTS Team.

SRTS Task Force. There may be benefits to forming a community-wide SRTS Task Force if a situation arises where several SRTS Teams are working within a

common geographic area. A community-wide Task Force might be able to produce a comprehensive SRTS Improvement Plan addressing infrastructure enhancements to the areas surrounding the schools, increased traffic enforcement, and community education to promote safety for the whole community.

Create Agreements with Partners. It is important to have the cooperation of all agencies responsible for implementing a SRTS programs. It may be advisable to seek partnership agreements from your local municipality, the school board and principal of your school early in your project. These agreements should indicate that the agency supports the program and agrees to participate by providing staff resources. City governments may need to provide police enforcement for some SRTS events and enlist the cooperation of the public works department in mapping the routes and identifying safety improvements. The principal and school board need to be aware and willing to set aside some class time for the program and to help promote events and contests within schools.

Public Participation. The public should be included throughout the SRTS planning process, and the participation must be promoted among all interested and affected parties—including minority and disadvantaged persons.

Table 3-1: SRTS Team Member/Committee Assignments and Responsibilities

COMMITTEE	RESPONSIBLITIES
Mapping and information gathering	Obtains maps, collects information about where children live, the routes they take to school and the condition of the streets along the way. This can be a big task and will likely take a lot of work so it should be assigned to several volunteers or done by a larger committee.
Outreach	Collects input from parents, teachers and students, and publicizes the program to the school and community.
Education and encouragement	Works closely with school administration and teachers to put education and encouragement activities in place, gathers materials for activities and solicits donations for programming and prizes.
Enforcement and engineering	Develops recommendations for enforcement and engineering solutions. Works closely with local government and other resources to find funding and make improvements.
Traffic safety	Identifies unsafe driver's behavior and develops an education campaign to increase awareness.

CHAPTER 4: EVALUATING EXISTING CONDITIONS AND IDENTIFYING PROBLEMS

CHAPTER 4: EVALUATING EXISTING CONDITIONS AND IDENTIFYING PROBLEMS

The Montana SRTS Program requires you to document pedestrian/bicyclist safety issues and specify how you will measure the success of your efforts.

Now that you've built interest and excitement about SRTS, it's time to start work on the first "E"– **Evaluation**. While quickly undertaking actions to benefit children walking or bicycling to school or to improve conditions along school routes is tempting, developing appropriate solutions requires fully understanding the nature and scope of the problem. In order to gain such an understanding and identify relevant SRTS projects or activities for implementation, you must critically evaluate conditions at school and in the neighborhood surrounding your school.

This important task will require you to make observations, conduct research, and gather input from students and parents. This initial evaluation will help identify infrastructure conditions and the attitudes or behaviors affecting walking and bicycling to school. To accomplish this, you will need to:

- PREPARE MAPS OF THE SCHOOL AND ITS NEIGHBORHOOD
- RESEARCH PLANNED ROADWAY IMPROVEMENTS
- SURVEY STUDENTS AND PARENTS FOR INFORMATION
- COLLECT DATA THROUGH FIELD OBSERVATIONS AND RESEARCH
- ASSESS CONDITIONS ON SCHOOL ROUTES AND AT SCHOOL
- RECOGNIZE UNSAFE BEHAVIORS
- ANALYZE AND SHARE YOUR FINDINGS

Completing these tasks will point you towards effective actions and strategies that will improve safety and increase the level of walking and bicycling to school.

This chapter describes methods of collecting information and documenting your findings. This is important because the Montana SRTS Program requires you to document pedestrian/bicyclist safety issues and specify how you will measure the success of your efforts. Collecting information in an efficient and organized manner will make it easier to document problems and to evaluate your success later on.

PREPARING BASE MAPS OF THE SCHOOL AND ITS NEIGHBORHOOD

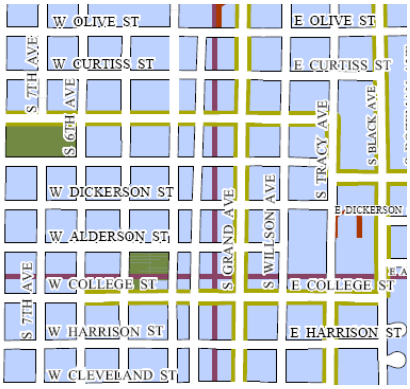
Maps are essential to SRTS efforts because they allow you to document existing conditions at school and in the school neighborhood and help you visualize and plan for future improvements along school routes. Maps can aid your understanding of your school and its surroundings as you identify the challenges and

opportunities for SRTS efforts. It's important to consider the information you can gather using maps, and to use them as a tool when documenting existing conditions. Two types of maps are typically needed for SRTS projects—a School Neighborhood Map and a School Site Map.

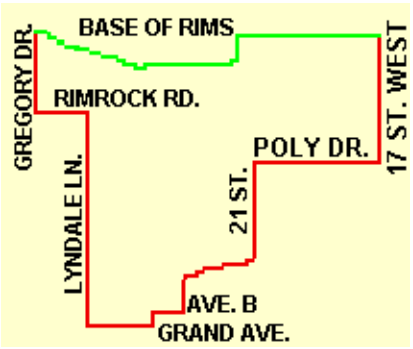
School Neighborhood Map

The School Neighborhood Map should have an identified scale and be large enough to show areas up to 2 miles in every direction from the school serving grades K-8. Things you should show on the School Neighborhood Map include:

- The school location.
- School district boundaries (if appropriate) or attendance area.
- The surrounding road and street network (including the names of roads and streets in the area).
- Signalized or stop-controlled intersections or otherwise safe street crossing areas near the school.
- Sidewalks, designated pedestrian and bicycle paths .
- The limits of the school's "walk-zone" (the areas near the school where bus transportation is not provided).
- The location of student residences (homes, apartments, subdivisions) and how many students are walking or bicycling from those locations. Nearby businesses or land uses which contribute to the school's traffic problems.
- Impassable or difficult terrain such as steep hills, forested areas, areas with fences or private property.



Typical School Neighborhood Map.



Example of school service area map for a Billings elementary school.

Information about where students live and how they get to and from school is especially important because it will give a sense of where the most student trips originate, and what potential routes they take to school. This information can be generated by surveying parents, asking students themselves, or from school administrators. School district staff in charge of planning for student transportation may even have computerized information or computerized maps showing where students live. Placing colored pushpins on a school neighborhood map representing where students live is a simple and effective way to help identify logical routes for children walking or bicycling to school.

Remember – your ultimate goal is to identify safe routes for walking and bicycling to school. Therefore, the mapping you do must focus on the routes that children currently take to school and where necessary, on alternate routes that may be safer for walking and bicycling. It's important to involve the students and have them help map the routes they use.

School Site Map

The School Site Map should be a large, scaled map of the school property that can be used to depict:

- Parent and school bus drop-off and pick-up zones
- Sidewalks
- Immediately adjoining roads, with their configurations (e.g., two-lane, four lane with a median, etc.)

- Intersections with traffic signals adjacent to the school
- Intersections with marked and unmarked crosswalks adjacent to the school
- Intersections staffed with crossing guards
- Location of bicycle racks
- Current parking for teachers and administrators
- Visitor parking areas

Recent aerial photographs of sufficient scale can also be very beneficial for use as either School Neighborhood or School Site Maps. Aerial photos provide an easy way to identify well-known landmarks, current land uses, and street configurations.

The maps you prepare can be high tech (computerized maps) or low-tech (a blank base map with information added by markers, sticky notes or colored push pins and yarn). Whatever way you chose, remember to clearly present the information you compile so it can be understood by others and used to help develop SRTS Team recommendations.

If you can enlist the help of the school board or local government planning agency, you can gather the information and have them prepare a computerized map for you.

Sources of School Neighborhood and School Site Maps

More and more, good maps are available on-line at local, county and state websites (see **APPENDIX A** for resources). The following resources are good starting points for your mapping efforts:

- School Master Plan documents
- School District Transportation Maps
- City/County planning office
- Public works department
- Census geography maps
- U.S. Geological Survey Quad Maps
- Aerial photos
- Urban Areas, Municipal, and County Maps (from MDT)

RESEARCHING PLANNED ROADWAY IMPROVEMENTS

Your review of existing conditions should also include researching planned roadway improvements for the neighborhood surrounding the school(s) being studied. It is essential to know where and what type of improvements (road or street construction or intersection projects) are being planned for the near future and who's proposing to do the work. These projects can have substantial effects on pedestrian and bicyclist safety and represent opportunities to tie the improvements you identify into projects that are already planned or under development.

In order to compile this information, all of the agencies responsible for the roads and streets surrounding the school(s) must be contacted. The agencies typically responsible for planning road and street improvements in Montana include: MDT

(state-maintained urban and rural road systems); county governments (county-maintained roads); and municipal government (local streets maintained by cities and towns).

The area of interest for planned projects on roads and streets in the school neighborhood is generally the area within a two-mile radius of the school. It will be easiest to identify what improvements are funded for construction within the next five years. However, it is useful to identify improvement projects that may be scheduled from 5 to 20 years out if possible. Many times these "long-range" projects are just scheduled and do not yet have funding commitments. Researching planned projects should generate the following information:

- Project location with beginning and end points
- Project Sponsor (city/town, county or MDT)
- Whether pedestrian/bicyclist facilities or improvements will be included with project
- Anticipated construction start date

Potential Sources of Information on Planned Projects

Information about planned projects on roads and streets in your community can also be found on-line by consulting:

- **Capital Improvements Plans.** Some local governments may also produce Capital Improvement Plans (CIPs) that guide the timing and budgeting of major improvement projects or equipment purchases over a given time period. Public works departments or City/County planning offices are good starting places to look for Capital Improvements Plans.

- **Urban Transportation Plans.** Detailed Transportation Plans identifying anticipated road and street improvements have been prepared for many of the larger urban areas in Montana. Transportation Plans for metropolitan areas (Billings, Missoula, and Great Falls) are typically updated on 3- to 5-year cycles. Plans for other designated Urban areas in the state are typically updated every 10 years. Links to several urban transportation plans can be found on MDT's website or through links at City or County websites.

- **MDT's Statewide Transportation Improvement Program (STIP).** This planning document, prepared on two-year cycles, includes a tentative list of projects on the state's transportation system. The STIP shows how MDT plans to obligate future funds to projects within each of its Transportation Commission (or financial) Districts. The STIP contains many of the projects MDT expects to be working on during a period covering four fiscal years. STIPs can be viewed on-line at MDT's website.

SURVEYING PARENTS AND STUDENTS FOR INFORMATION

The most effective SRTS programs take advantage of the first-hand experiences of students, parents and teachers at the school and seek input from the broader community. These are the people who observe and experience safety problems at and around the school each day. Surveying these groups for information and opinions will help you gain a better understanding of the current situation and more effectively plan future SRTS activities and projects.

Surveys, consisting of a series of oral or written questions, are used to collect information about attitudes, knowledge, and opinions from individuals. They can be administered in person, over the telephone, or by mail, or via e-mail. Surveys can provide a wealth of information, but the survey questions asked must be designed carefully and sampling procedures must be well thought out.

Surveys are a valuable way to gather useful information about how children get to school each day, real and perceived problems, and identifying opportunities to improve conditions for walking or bicycling to school. Surveys can be concise and done for only a day or two, or be more extensive efforts gathering various types of data over many days.

Keep in mind surveys administered to students and parents should be designed to generate specific information in an unbiased manner. Answers to survey questions should be easy to compile so the results can be readily analyzed. School administrators, teaching staff, traffic engineers, or local health professionals would be good resources in developing surveys.

Recognize data can sometimes be difficult to gather and may vary from month to month or by season. Data collected from young students may be inaccurate or incomplete. However, even imperfect data can contribute to understanding problems and identifying opportunities.

Student Surveys

Identifying how students travel to school is essential information for SRTS programs and this information can be gathered by a simple survey administered by the students themselves, teachers, or by volunteers from your SRTS Team. The simplest way to get this information is to ask for a show of hands in each home room indicating how many students walked, bicycled, rode school buses, or were driven by parents or other family members to school. Other transportation choices (such as skateboarding, scooters, carpooling, etc.) can be added if necessary. The survey should be conducted for a week at a time or one day per week for an extended period to get an accurate representation of how students get to school considering a variety of weather conditions and other variables. Repeating the same survey after SRTS activities have been started will help identify any changes in student travel behavior.

A simple School Travel Survey for students is provided in **APPENDIX B**.

Parent Surveys

Surveying parents can provide valuable information about the reasons behind student travel patterns. Parents should be asked how their children currently get to school and why a particular mode of travel was chosen. Since the majority of parents (or other family members) routinely drive children to school, finding out why is important information to gather. Equally important is discovering from parents what factor(s) might allow their children to walk or bicycle to school. This critical information will help you develop a SRTS program responsive to parental concerns.

Surveys are usually distributed to parents by mail or sent home with students. If a school's enrollment is especially large, it may be desirable to survey a representative sample of parents by telephone. This can be done by randomly choosing parents from the school's listing of parents. Many schools also use the internet for communications with parents. Posting a survey on a website maintained by the school or school district is another way you could collect this information from parents. The method chosen for distributing the survey might influence survey length and design. Given the busy schedule of most parents, the response to your survey may be better with a brief written survey instead of a survey requiring a lengthy telephone interview.

Surveying parents is also a good way to publicize and generate interest in a SRTS program. Be sure to ask parents if they want to volunteer, and provide space for their contact information on survey forms sent home with students. An example of a Parent Survey is provided in **APPENDIX B**.

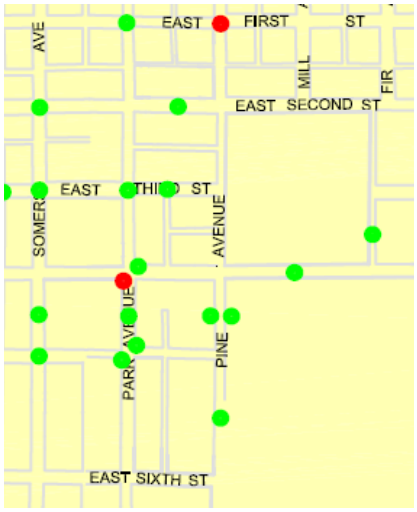
COLLECTING DATA THROUGH FIELD OBSERVATIONS

Observing and documenting walking, bicycling, and driving behaviors at school and in the school neighborhood is essential to SRTS efforts. The data collected through field observations helps identify deficiencies and unsafe behaviors and can be suggestive of actions or improvements needed to address problems.

Field observations are used to help assess behaviors or measure existing conditions. Information gained through field observations can be used to detect the presence or absence of a behavior (such as the number of bicyclists wearing helmets among those bicyclists observed) or measure an existing condition (like vehicle speeds or the number of motorists stopping for pedestrians in a crosswalk). To perform sound field observations, you will need to determine where and when to make the observations, how many observations to record, and what procedures will be followed to record the data.

Systematic data collection procedures are important since several people may collect data. It's critical that those collecting data interpret what they are seeing to minimize any variations in the data. Designing data collection forms that can be used by everyone and providing training on how to make observations are ways to ensure that data is collected in a consistent manner.

As you collect your data, it is critical that you carefully document the procedures you follow and organize the information you collect. Similar data will need to be collected after you've implemented SRTS activities to compare with your "baseline" data. For this reason, the data has to be collected at the same locations and times of day, following the same procedures, and recorded in the same manner by your observers. Failure to follow the same data collection procedures can make it difficult to evaluate the success of your SRTS efforts.



Example of map showing crash locations

Simple Counts You or Others Can Do

Traffic counts measure the number of vehicles arriving at school. A simple traffic count involves volunteers at each school entrance counting cars arriving during the half-hour before school begins. More complex counts could tally the number of cars passing the school and/or the number of students bicycling and walking to school.

A simple way to measure the level of bicycling to school is to count the number of bicycles in the racks after school starts. With multiple observers, you can find out the number of children getting out of each car at drop-off points around the school. School bus drivers should be able to provide you with counts of the number of children on their bus each day. Students can also conduct travel surveys as classroom activities. At the end of the school year and/or during SRTS events, these same counts can be repeated to determine any changes in traffic patterns around the school.

RESEARCHING RECORDS AND ARCHIVAL DATA

Because safety concerns for children walking or bicycling to school may not always be apparent through simple observations, it is important to obtain and review other data as part of your SRTS effort. Researching records and other archival data can often provide key information about travel patterns and driver behaviors or areas that pose safety concerns.

Archival data can be used to research and document a variety of issues in the neighborhoods surrounding schools. Archival sources would include a variety of materials such as police records, motor vehicle crash databases, historic traffic counts, and vehicle speed studies. These records are insightful because the information allows you to understand how conditions (like traffic volumes or crash rates) have changed over time.

Access to archival data may present challenges. Organizations that maintain databases with personal information usually have strict guidelines about who can access the information and what can be done with the data. However, since your review is not concerned with specific individuals, you may be able to obtain summary data with the personal information deleted.

ASSESSING CONDITIONS ON SCHOOL ROUTES AND AT SCHOOL

So far, you've created base maps, compiled input from students and parents, and collected useful information through observations at school and by researching records. Now, it's time to take a "hard look" at conditions at school and along the streets you identified as routes used by students walking or bicycling to school.

This task is important because to determine the right countermeasure, you must establish whether the problem condition is isolated to one location or a particular corridor, or a broader and more general problem affecting the entire school neighborhood. The objective of this task is to identify specific situations at school and conditions on surrounding streets that hinder safe walking and bicycling. Factors that may inhibit walking or bicycling to school include, but are not limited to:

- Presence of street lighting;
- Presence of sidewalks (available or not, width, and condition);
- Presence of bicycle facilities (available or not, type, width, and condition);
- Traffic volumes;
- Lack of routine maintenance;
- Difficult crossing locations; and
- Unique neighborhood or topographic conditions.

SRTS projects frequently rely on organized group activities known as Walking and Bicycling Audits and School Site Audits to identify physical conditions that hamper walking and bicycling in the neighborhoods around the school and at school. The purpose of these group sessions is to observe the activity during student drop-off and pick-up times, tour the school site, and critically examine the routes used for walking and bicycling to school. MDT's SRTS Program can provide funding to help you complete these assessments.

Walking and Bicycling Audits

Walking and Bicycling Audits are often organized by the STRS Team, school administrators, parents or parent groups and may involve a variety of other SRTS stakeholders. During the audits, the group (or volunteers from the group) walks or bicycles the streets used as routes to school. Safety concerns along school routes are documented during these group activities by making notes and comments directly on School Neighborhood Maps. Photographs are often used to help clarify or illustrate problems. After walking and bicycling routes have been reviewed, the group reconvenes to compile a list of problems on one School Neighborhood Map.

A Neighborhood Site Audit Form can be found in **APPENDIX B**.

Standardized evaluation forms, known as the "Walkability Checklist" and "Bikeability Checklist," are available to help you conduct Walking and Bicycling

Audits in the neighborhood around your school. The Checklists lead you through the process and include a variety of questions designed to help evaluate walking and bicycling conditions in your school neighborhood. In addition, the Checklists provide both short-term and long-term ideas to address the potential problems you identified near your school.

Copies of both Checklists can be found in **APPENDIX B** and accessed online at:
http://www.walkinginfo.org/pdf/walkingchecklist.pdf
http://www.bicyclinginfo.org/pdf/bikabilitychecklist.pdf

Interactive versions of the Checklists can be found on the Robert Wood Johnson Foundation website at:
http://www.rwjf.org/files/newsroom/interactives/walkability/walk_app.html
http://www.rwjf.org/files/newsroom/interactives/sprawl/bike_app.jsp

School Site Audit

After critically examining conditions in the neighborhood, the next task is to review walking and bicycling conditions on the school property. A School Site Audit is a systematic way to gather data about conditions that affect walking or bicycling focused on just the school site. Conditions worth reviewing include:

- building entrances
- student drop-off and pick-up locations
- bus loading zones,
- bicycle parking availability and locations
- sidewalk, pathway, and driveway locations—including ADA facilities
- condition of sidewalks and pathways
- crossing guard locations
- signing and lighting
- adjacent intersections.

Conducting a School Site Audit will help you identify problems and discover potential areas for design improvements and increased safety. Members of the SRTS Team and the School Principal should complete the audit based on observations when children are arriving and leaving school. Your School Site Map will be needed during the audit and can be supplemented or updated based on your observations. Identified problems or concerns at the school should be noted on the School Site Map.

See **APPENDIX B** for a sample School Site Audit.

RECOGNIZING UNSAFE BEHAVIORS

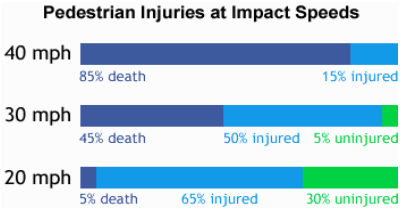
Audits help identify physical conditions that pose safety concerns for pedestrians and bicyclists. However, problems may also be due to unsafe behaviors by driv-

ers, pedestrians and bicyclists. Common unsafe behaviors often encountered near schools are identified below.

Unsafe Driver Behaviors on Streets Around the School

- Speeding through residential streets and school zones
- Failing to yield to students walking or bicycling, especially in crosswalks (The law requires motorists to stop for pedestrians in crosswalks.)
- Running red lights or stop signs
- Passing stopped school buses
- Parking or stopping in crosswalks, sidewalks or paths
- Disregarding traffic control by crossing guards

Speeding is an especially important unsafe behavior to identify because of the relationship between the severity of pedestrian injuries and motor vehicle impact speeds. While many drivers may not view going 10 mph over the speed limit as being noticeably less safe, just a 10 mph difference in speed is critical with respect to the severity of a pedestrian injuries resulting from vehicle collisions. At 20 mph, a pedestrian has about a 5% chance of dying if he is hit by a car. At 30 mph, the chance of dying increases to roughly 45%. If a pedestrian is hit by a motor vehicle traveling 40 mph, the risk of dying increases to 85%.



Source: U.K. Department of Transportation, 1987. Killing Speed and Saving Lives, London, UK DOT.

Unsafe Driver Behaviors at the School

- Illegal parking
- Cars stopping or waiting in bus only zones
- Dropping off students in the street rather than in the appropriate location adjacent to the curb
- Not following school drop-off and pick-up procedures

Unsafe Pedestrian Behaviors

- Not following the directions of the crossing guard or traffic signals
- Not looking left, right and left again before crossing the street
- Crossing a street at undesirable locations
- Darting out between parked cars or alleyway
- Wearing dark clothes when there is poor lighting

Unsafe Bicyclist Behaviors

- Riding into traffic without looking left, right and left again
- Riding against traffic instead of with the traffic flow
- Turning left without looking and signaling
- Not obeying traffic signs and signals
- Riding out from driveway or between parked cars
- Not wearing a helmet
- Not being visible at night when riding in road
- Crossing driveways or alleys without looking for vehicles

ANALYZING AND SHARING YOUR FINDINGS

Decisions to implement safety programs and improvements are often made in response to an obvious hazardous situation (an unsafe pedestrian crossing location on a busy street) or as a reaction to an event like a traffic crash resulting in a severe or fatal injury. It's tempting to jump ahead and get something done. Quick action may benefit children walking or bicycling to school, but it's also important to fully understand the problem before undertaking efforts to solve it.

While the information you've gathered highlights potential problems and issues, the information must be analyzed to establish the magnitude of the problem, the underlying causes of the problem, and the groups most affected. Determining what action to take also requires knowing whether the problem is a problem unique to one location or a broader and more general problem that affects the entire school neighborhood. Taking a step back and viewing all of the information collectively, may also provide you with new insights into problems and ways to address them.

The information from your field observations, research, surveys, and audits also needs to be shared with the stakeholders who have been involved with your SRTS effort up to this point. Sharing your information and findings is important for several reasons:

People want to know what you have found out. If you asked parents at the school to fill out a survey, they will likely want to know the results. Likewise, school administrators may be anxious to find out the results of school site and neighborhood audits.

You can inform the community and help raise awareness of SRTS issues. Your findings may discover a serious concern for school children walking and bicycling to school. Suppose your data shows a high level of speeding near the school. Publicizing the fact offers a way to make the community aware of the issue and making the first step toward changing this unsafe driving behavior.

If you help people recognize the existence of a problem now they may be more willing to accept your recommended solutions later. Sharing your information offers you a way to help gain community support early on for SRTS projects and strategies.

Most importantly, sharing your findings can generate input and help you create a vision for SRTS in your community. By sharing your findings, you may learn that others at school and in your community share common concerns and may already be working on activities or programs that support SRTS.

The method chosen to share your information and findings is up to your SRTS Team. Holding your own open house meeting or attending a regular meeting held by a parent organization may be the most effective ways to share the information with parents, teachers, and community members. Newsletters and school websites can also be used to communicate key findings.

KEEP YOUR INFORMATON ORGANIZED!

You will generate lots of relevant information through data collection, research, and audits of the school site and its surrounding neighborhood. We can't stress enough the importance of documenting your work efforts and keeping the information organized.

Well organized information allows others to readily see the work done by your SRTS Team. It also allows you to readily access and provide the data verifying the existence of problems often needed to support funding applications. While there are many ways to organize your information, simply setting up a filing system in a three-ring binder is an effective way to keep key information together.

SUMMARY OF INFORMATION OFTEN NEEDED FOR SRTS

Table 4-1 provides a summary of information often needed in support of SRTS programs. The table identifies the type of information and potential sources or methods that can be used to obtain the information.

Table 4-1: Information Needed In Support of SRTS Programs

TYPE OF INFORMATION	POTENTIAL INFORMATION SOURCES
Existing level of walking/biking to school (current # of students walking or biking to school	• Student survey • Observation at school to count pedestrians and bicyclists
Potential walking/bicycling level (# of students within reasonable distance of school who do not currently walk or bicycle) The location of all the students' homes in a database and/or on a map	• School records of students' home addresses • Student survey with maps • Parent survey with maps
Socio-economic characteristics of students # of non-English speaking students # of students in before and after-school care/programs # of students eligible for free or reduced-price lunch programs	• School/School District records
Physical barriers to a safe or appealing walking/bicycling trip to school	• Student survey with maps • Parent survey with maps • Walkability/Bikeability Checklists
Preferences or attitudes about walking or bicycling to school	• Student survey, Parent survey • Survey of support for walking/bicycling in local community (from parents, community groups, schools, government, and health professionals)
Pedestrian/bicyclist accidents and severity information	• State Highway Traffic Safety Bureau • DPHHS Emergency Medical Services Trauma Registry • MDT Traffic & Safety Bureau/FHWA • Other advocacy groups
Traffic counts for major streets near school	• MDT Traffic & Safety Bureau • City/county planning or Public Works departments • Observations or automatic traffic counters
Traffic law infractions near school	• Local police department data • Special police study • Observational study by advocates
Dangerous behavior near school (e.g., crimes against children, harassment of students, bullying)	• Local police department data • Reports from school administrators
Physical activity level of students	• Student survey
Walking/bicycling behavior in community	• Parent survey; community survey
Air pollution caused by private car trips to/from school	• Observations of parents or students regarding the smell of the air • Air pollution monitoring via mechanical device

Adopted from information contained in Safe Routes To School: Practice or Promise

CHAPTER 5: GOALS AND OBJECTIVES

CHAPTER 5: GOALS AND OBJECTIVES

The goals you choose will influence the types of activities undertaken and the message that needs to be regularly communicated to schools, parents, and students.

The previous chapter outlined ways to gather information and identify problems, now its time to establish goals and objectives for your SRTS program or activities. **Goals** are broad statements that express what you hope to accomplish through your efforts. **Objectives** are clearer statements of the specific activities required to achieve the goals you establish.

Establishing goals and objectives is also important when attempting to secure support and funding for SRTS projects. For example, applicants seeking funding through MDT's SRTS Program are specifically asked to "clearly describe the project scope including the goals and objectives of the project." With this in mind, some guidance on setting goals and developing objectives is provided below.

SETTING GOALS

When setting goals, it's important that they be realistic and can be accomplished within a reasonable time frame. Setting unobtainable goals will doom your program or project to failure from the outset. Instead, set goals that can be accomplished within one to three years – the life of a typical project.

Goals should be stated explicitly. While you may know what you plan to do, don't assume anyone else does. Write your goals specifically and clearly so that potential supporters and funding entities will know exactly what you want to do and how you will accomplish your goals.

The goal(s) you choose will influence the types of activities undertaken and the message that will need to be regularly communicated to schools, parents and students. Some typical goals of SRTS activities are to:

- Increase the numbers of children walking and bicycling to school.
- Increase awareness of the importance of regular physical activity for children, improved pedestrian safety, and healthy and walkable communities.
- Mobilize communities to work together to create safe routes to school.
- Help children to become better acquainted with their school neighborhood.
- Reduce automobile use and related traffic hazards in the vicinity of the school.
- Promote safer, less-polluted environments in school neighborhoods.

Note that many of these goals are similar to the general purposes identified in the legislation establishing the federal SRTS program.

A common way to define goals is to ask stakeholders to share a vision of what they would like to see five years in into the future with respect to children walking

and bicycling to school. This focuses team members on what is achievable within a reasonable amount of time.

DEVELOPING SMART OBJECTIVES

Objectives are not simply a list of activities but specific steps towards accomplishing the targeted goal. Your objectives must include a clear statement of the means of measuring whether the goal has been accomplished and how it contributes to accomplishing your overall goal(s).

The Art of Appropriate Evaluation: A Guide for Highway Safety Program Managers (DOT HS 808 894, May 1999), a publication developed for the NHTSA, presents a discussion advocating the development of objectives using the SMART approach. The acronym describes the key characteristics of meaningful objectives (**S**pecific, **M**easurable, **A**ction-oriented, **R**easonable, and **T**ime-specific) program objectives. The following discussion of objectives was modified for SRTS purposes based on materials presented in the referenced publication:

- ***Objectives should be SPECIFIC:*** Avoid using generalities like "improving traffic safety" or "increasing awareness." For example, instead of trying to "reduce unsafe driving behaviors", you might want to focus on decreasing speeding or reduce red-light running, which could be the unsafe behaviors that are causing the most concern.

  If you identify exactly what you want to happen, then you can document your success. Sometimes you can be specific about the amount of change you anticipate, expressed either in absolute (increase the number of children walking to school to X percent) or relative (increase the number of children walking to school by X percent over existing conditions) terms. Or, you can simply observe and record the change in behavior.

- ***Objectives should be MEASURABLE:*** If the objective is measurable, it means that a method of measurement has been identified that will allow you to track your progress toward meeting the objective. Measurement is the standard used for comparison. For an objective to be measurable, there must be something you can quantify, like reducing vehicle travel speeds in school zones, and you must be able to detect a change over time.

- ***Objectives should be ACTION-ORIENTED:*** You usually can see an action and count the number of times it happens. It is much easier to document increased levels of walking and bicycling to school by counting the actual numbers of students engaging in such behaviors than would be to document increased public support for more walking and bicycling to school.

- ***Objectives should be REASONABLE:*** Select a strategy or countermeasure that will address the identified problem and then establish a reasonable target for success. For example, if speeding in school zones was the identified problem and a community chose to implement a public awareness campaign about the issue, it would be unreasonable to make the objective of the

campaign a community-wide reduction in the severity of pedestrian-related injuries. While this may be a desirable outcome, it's unreasonable to expect that such campaign on speeding in school zones alone would change behaviors and ultimately reduce pedestrian-injuries in the entire community. Objectives that are reasonable also need to be realistic—meaning that the resources (skills, money, equipment, etc.) are available to achieve the objective.

- *Objectives should be TIME-SPECIFIC:* Time-specific means setting an achievable and realistic deadline for meeting the objective. Deadlines make it clear to everyone when results can be expected. Deadlines need to be both achievable and realistic. If you don't set a time you will reduce the motivation and urgency required to execute the tasks.

Through well-written objectives, it will be obvious if you meet them or not. They challenge you to accomplish what you set out to do and serve as a constant reminder of what constitutes success. This is all the more reason to be honest and practical when you write them.

Once you have developed your objectives, make them known to decision-makers and others who can affect the outcome of our efforts.

CHAPTER 6: PULLING IT ALL TOGETHER WITH AN ACTION PLAN

CHAPTER 6: PULLING IT ALL TOGETHER WITH AN ACTION PLAN

Now that you have evaluated conditions at and around your school, received input from stakeholders, and had an opportunity to thoroughly analyze safety issues and concerns—it's time to develop a plan of action to implement SRTS. Your SRTS plan will include recommendations to increase walking and bicycling to school and improve safety at school and along school routes.

SRTS plans typically require you to state your goals and objectives, identify the actions or strategies to be used to meet specified objectives, and establish a time-line for implementing the plan. Plans are important because they:

- Help justify funding requests, if funding is being sought.
- Identify priorities and the steps to achieve success.
- Demonstrate consensus and shared responsibilities.

This chapter of the Guidebook focuses on techniques often used to make walking and bicycling to school safer and to increase the number of children actually walking or bicycling.

KEY ELEMENTS OF SRTS PLANS

SRTS plans typically include recommendations for evaluation, education, encouragement, and enforcement activities and identify needed engineering improvements to pedestrian and bicyclist facilities. These SRTS plan components are often referred to as the five "Es":

EVALUATION – Collecting and analyzing data before, during, and after SRTS activities to identify and document problems, monitor progress, and measure your success.

EDUCATION – Activities or programs designed to teach children how to walk and bicycle safely and the benefits of these transportation choices and efforts to remind parents, and other drivers to yield to pedestrians, to drive safely and take other actions to make it safer for pedestrians and bicyclists in the vicinity of schools.

ENCOURAGEMENT – Strategies to develop awareness and generate enthusiasm about walking and bicycling safely to school.

ENFORCEMENT – Efforts to increase community awareness of school safety issues, deter unsafe behaviors of drivers, pedestrians and bicyclists, and to encourage all road users to obey traffic laws and share the road safely.

ENGINEERING – Improvements to the built environment designed to reduce vehicle traffic volumes or speeds and to increase safety for those walking and bicycling to school.

SRTS plans typically employ a variety of complementary education, encouragement, enforcement and engineering activities to help address specific problems or meet program goals. Because the needs of every community are unique, each community or individual school may choose to emphasize different components in its SRTS plan. Education, encouragement and enforcement strategies often involve activities that are low-cost and easy to get started. Some engineering solutions can be accomplished relatively easily with little cost but many engineering improvements will require substantial time and financial commitment.

Regardless of which "E" you focus on, remember that improving safety and increasing the numbers of children walking and bicycling to school are your primary goals. By ensuring the activities in your plan address the problems you identified, you are well on your way to meeting these overriding SRTS goals.

The first "E"—**EVALUATION**—is an ongoing component of SRTS efforts. Chapter 4 of this Guidebook discussed one aspect of evaluation, the initial collection of data and existing conditions assessment to provide "baseline" information and to help identify areas of concern. Chapter 7 will be devoted to another aspect of Evaluation—ongoing evaluation of your progress and measuring the success of your SRTS efforts.

The remainder of this chapter describes **EDUCATION**, **ENCOURAGEMENT**, **ENFORCEMENT** and **ENGINEERING** tools and strategies often included in SRTS plans. While this chapter discusses a broad range of SRTS actions and measures, please recognize that a variety of funding sources may be necessary to help you implement them. Funding ideas to help you implement SRTS are discussed in Chapter 8 of this Guidebook.

Montana's SRTS Program offers funding assistance only for specific types of noninfrastructure and infrastructure projects. Noninfrastructure projects eligible for funding through the SRTS Program include Evaluation, Education, Encouragement and Enforcement activities such as:

- SRTS assessments and development of SRTS action plans;
- tracking progress and performance monitoring;
- public awareness campaigns and incentive programs;
- bicycle and pedestrian safety education;
- health and environment training; and
- increased enforcement efforts, including speed trailers.

Montana's SRTS funding for infrastructure projects can be applied to Engineering projects including:

- new or improved pedestrian and bicycle routes;
- crosswalks, walkways, or pathways on publicly owned property or easements; and
- acquiring bicycle storage racks.

Infrastructure projects using Montana's SRTS funding must be publicly accessible, within 2 miles of K–8 schools, and be maintained by a local government.

More information about specific types of non infrastructure and infrastructure projects eligible for SRTS funding can be found throughout this chapter and in Chapter 9.

EDUCATION

EDUCATION is one of the key strategies employed in SRTS programs. Education provides opportunities to teach pedestrian, bicyclist and traffic safety and to create awareness of the benefits of SRTS. Although education activities often focus on children, the parents, neighbors and other drivers in the community also need to be reminded to drive safely and take other actions to make it safer for pedestrians and bicyclists. Education strategies are most effectively implemented through both school-based activities for children and outreach efforts directed at parents and the community.

Montana's SRTS Program can provide non-infrastructure funds for Education activities such as teaching bicycle and pedestrian safety skills; Safe Routes to School training, teaching traffic safety; training crossing guards; and teaching children and parents about the health benefits of walking and bicycling.

Education Directed At Children

Pedestrian Safety Skills. According to information from the National Safe Kids Campaign, pedestrian injury remains the second leading cause of unintentional injury-related death among children ages 5 to 14. Young children are particularly vulnerable since they do not yet possess the developmental abilities to accurately assess and cope with the threats posed by traffic. Studies suggest that essential sensory abilities, like auditory and visual acuity and depth perception, develop gradually and may not fully develop until at least age 10.

Information on the types of pedestrian activities leading to injuries or fatalities show that improper crossings of roadways and intersections, walking or playing in the roadway, and darting or running into the road are all major factors in such incidents. These are all fairly common behaviors of young pedestrians. For these reasons, children need to know basic pedestrian safety rules and how to interact with drivers.

The National SAFE KIDS Campaign advocates that children should walk with an adult until they are at least 10 years old and understand and practice the following basic pedestrian safety rules:

- Cross the street at the corner or at a crosswalk if there is one, and obey all traffic signals.
- Look left, right, and left again before crossing and keep looking both ways until reaching the other side.
- Walk on a sidewalk; if there is no sidewalk, walk facing oncoming traffic.

- Only cross in front of a school bus when the driver says it is safe. Do not cross behind the bus or where children can not be seen by the driver.
- Do not play in driveways, streets, parking lots, or unfenced yards by the street.
- Do not dart out between cars.
- Wear white clothing or clothing with reflective material when walking at night.

Comprehensive pedestrian safety educational programs also teach children about other situations they may encounter and proper pedestrian behaviors, such as:

- Whenever possible, always walk on sidewalks. If there are no sidewalks, walk facing oncoming traffic and stay as far to the left as possible.
- Watch for vehicles turning into or backing out of parking spaces or driveways.
- When stopped at the curb, if a vehicle or other object is blocking the view of on-coming traffic, children should stop at the outside edge of that object before crossing at a crosswalk.
- Never enter the crosswalk from between parked cars or from behind bushes.
- Make sure that all vehicles have stopped before crossing the street.
- Attempt to make eye contact with drivers of stopped or turning vehicles, but do not assume that the drivers can see them.
- Teach children the meaning of all traffic signs and markers such as pedestri- and crossing signals and crosswalks.
- Teach children how to cross at corners when crosswalks are not marked.
- Teach children to cross directly, never diagonally.
- Teach children never to enter the crosswalk when the "DON'T WALK" signal is flashing.
- Tell children to be extra careful in rain or snow since extra time and distance may be needed for vehicles to stop.

Ideally, children would receive most of their instruction on pedestrian behaviors from parents; however this does not always happen. Therefore, school-based education programs on pedestrian safety are often the best way to ensure that all children get the chance to learn and practice the same skills and establish good walking behaviors that can last a lifetime.

Bicyclist Safety Skills. Riding a bicycle represents a major step towards independence and mobility for children. SRTS education efforts can build essential riding and safety skills and help instill the confidence bicyclists can use over a lifetime. Educating children on bicycle safety may pay other dividends by making these future drivers more aware of bicyclists on the street.

Assuming children have sufficient bicycle handling skills to ride to school, education efforts should focus on safe behaviors before and during the ride to or from school including:

- Dressing appropriately (wearing light-colored clothing to make riders more visible during low light conditions) and wearing a properly fitted helmet.
- Riding a bicycle that fits and is in good working condition.
- Understanding that bicycles are meant to carry only one person and to use a backpack or basket on the bicycle to carry school supplies and books.

- The importance of being visible if riding during the dark. Montana law requires bicycles to be equipped with headlights and appropriate reflectors.
- Choosing the route with the fewest streets to cross and avoiding busy streets with high-speed traffic.
- Looking all directions before entering the street and watching out for other vehicles and hazards.
- Safe behaviors for crossing streets including large and busy intersections.
- Following traffic laws, including riding in the same direction as motor vehicles, using hand signals when turning and stopping, and obeying traffic signs and signals.

Personal Safety. Fear of crimes against children, particularly child abduction, discourages some parents from allowing their children to walk or bicycle to school. Some students and parents worry about bullying by other children while walking or bicycling to school. Although crimes against children are extremely rare in Montana, the real dangers from crime and parent's perceptions about such crime should be addressed through SRTS education efforts.

Personal Health and Environmental Benefits. Children also need education about the benefits to personal health and the environment provided by walking and bicycling. Walking and bicycling are life time activities and children need to be aware of and understand the benefits of physical activity on their own health. Educational efforts can help children learn that they can have positive effects on the air quality and help save energy resources by walking and bicycling instead of driving.

Education Topics by Age and Grade. SRTS education activities for children typically begin in kindergarten and continue throughout elementary and middle school. Table 6-1 identifies common education topics and indicates when such topics are typically introduced to children in elementary and middle schools.

Ideas for SRTS Education Activities. In addition to being included with classroom or physical education activities or part of a comprehensive curriculum in elementary and middle school, safety education and other SRTS messages may be taught in a variety of ways including art projects, skits or student presentations, videos, or guest speakers. With support and assistance, students can also participate in SRTS educational projects like:

- Mock game shows to test their knowledge of safe walking and bicycling behaviors, traffic laws, health, and environmental issues.
- Developing maps of their routes to school showing hazards and safety concerns for walking and bicycling.
- Developing maps of school neighborhood showing specific transportation facilities like sidewalks, crosswalks or bicycle paths.
- Interviewing individuals involved in traffic safety or transportation and planning issues.
- Bicycle safety rodeos to practice basic bicycling skills and handle traffic situations in simulated settings.
- Designing a handbook on bicycle or pedestrian safety.
- Creating and conducting surveys to find out attitudes about traffic in the school neighborhood.

More information about walking and bicycling education issues and programs for children can be accessed at the following websites maintained by the Pedestrian and Bicyclist Information Center:

http://www.walkinginfo.org/ee/children.cfm
http://www.bicyclinginfo.org/ee/education.cfm

Table 6-1: SRTS Education Topics by Age/Grade

SRTS EDUCATION TOPIC	APPROPRIATE AGE GROUP		
	GRADE K-3 (Ages 5-8)	*GRADE 4-6 (Ages 9-12)*	*GRADE7 -8 (Ages 13+)*
Pedestrian Safety			
Basic Pedestrian Safety	●	●	
Crossing Streets and Intersections	●	●	
Walking Safely in Parking Lots	●	●	
Pedestrian Safety near School Buses	●	●	
Bicyclist Safety			
Beginning Bicycle Handling Skills and Safety Training, Spotting Hazards	●		
Helmet Use and Safety	●	●	●
On Road Bicycle Riding (age 10 +)		●	●
Route Selection		●	●
Advanced Riding Skills/Equipment		●	●
Traffic Safety			
Beginning Traffic Safety	●		
Traffic Safety		●	●
Rules of the Road, Traffic Laws Responsibilities		●	●
Neighborhood/Community Awareness	●	●	●
Personal Health Benefits	●	●	●
Benefits of an Active Lifestyle			
Environmental Benefits		●	●

Education Directed At Parents

Parents determine how their children get to school so they can strongly influence whether more children walk and bicycle to school. Parents naturally teach safety behaviors to their children and can have a significant impact on how their children behave during trips to and from school. For these reasons, SRTS education efforts need to include the parents of school children and provide them with good information about the benefits of walking and biking to school and about pedestrian and bicyclist safety. Informed and interested parents can identify safe walking and bicycling routes for their children, teach their children safety rules as they walk or bicycle, and model safe behavior for their children.

Parents often account for a significant portion of the drivers at or near schools each day and some parents undoubtedly contribute to safety problems by speeding through school zones and failing to obey traffic controls. Therefore, the behavior of "parent drivers" not only impacts the safety of their own children, but all children as they walk or bicycle to school. A parent who speeds to drop off their child at the school makes a less safe environment for walkers and bicyclists.

Children are most likely to retain and use safe walking and bicycling skills if they have a chance to practice them with supervision and reinforcement. Parents teach and model safe behavior for their children and need to practice safe walking and bicycling with their children. Parents who walk with their children to school can provide supervision and guidance for other children just learning how to cope with traffic and other conditions on their way to school.

Important Information for Parents

- Parents often think their children are able to handle traffic safely by themselves before they are actually ready.
- Children don't have the skills to handle risky situations until about age 10.
- Boys are much more likely than girls to be injured in traffic because the often take more risks.
- Bicycles are vehicles and children should not ride bicycles in the road until they fully understand and can follow traffic rules.
- Children often act impulsively and do what parents or drivers don't expect.
- Children assume that if they see the driver, the driver sees them.
- Children can't judge speed and they think cars can stop instantly.
- Children are shorter than adults and can't see over cars, bushes, and other objects.
- Parents need to know the appropriate drop-off and pick-up locations at school and any special rules or procedures that apply during these times.

Education Directed At All Drivers

SRTS education activities should also target all drivers. Each driver has the ability to contribute to or detract from the safety of the walking and bicycling environment for children through the manner in which they operate their vehicles. Failure to comply with traffic laws and posted speed limits are examples of driving behaviors that result in unsafe conditions for children and other pedestrians and bicyclists.

Drivers traveling at safe speeds, yielding to pedestrians and bicyclists, and stopping at stop signs and crosswalks help create a pedestrian and bicyclist-friendly environment.

Key Messages for the Driving Public

Many drivers passing through school zones before and during school are driving too fast. A National SAFE KIDS Campaign study done in 2000 found that the majority of motor vehicles in school zones exceed the speed limit during the 30-minute periods before and after school. The organization collected speed data for nearly 17,000 vehicles in school zones in 29 cities across the U.S. and found:

- 65% of drivers were traveling over the speed limit;
- About 25% of all drivers were traveling at least 10 mph over the speed limit; and
- 5% of the drivers were traveling at least 20 mph above the posted speed limit.

Vehicle travel speeds have a direct relationship on the severity of pedestrian injuries. As vehicle speeds increase, the likelihood for more severe pedestrian injuries or death also increases. Studies done in the United Kingdom show that if a pedestrian is struck by a car traveling at 40 mph, there is an 85% chance the pedestrian will be killed. This percentage drops to 45 percent at 30 mph and 5% at 20 mph.

The National SAFE KIDS Campaign study on vehicle speeds in school zones referenced above found that regardless of the speed limit, many vehicles were traveling at speeds potentially lethal to children. Notably, the study showed more than 30% of the drivers were traveling at 30 mph or above and 7% of the drivers were traveling at 40 mph or above. These findings support the need for efforts to enforce school zone speed limits and helping minimize children's risk of getting hit by cars. The prevalence of speeding in areas near schools, where safety measures and enforcement often exist, suggests that drivers may be more neglectful in other areas of the community (including routes used by children to get to and from school) where pedestrians and bicyclists may be present.

Failure to comply with stop signs and other traffic controls also contributes to unsafe environments. A 2003 study by the National Safe Kids Campaign examined driver behavior at intersections in school zones and residential neighborhoods in 39 states. The study found that 37% of the drivers failed to completely stop at the intersection controlled by stop signs and 7% did not even slow down for the sign. The study found that drivers were more likely to stop when a pedestrian was present compared to not present, 32% of drivers violated the stop signs when children were present and 24% of drivers did not come to a complete stop at the intersection while pedestrians were crossing.

Additionally, a National Safe Kids Campaign study in 2003 of crosswalks in school zones shows that approximately 30% of drivers stopped within or beyond the boundaries of crosswalks, obstructing the pedestrian crossing.

ENCOURAGEMENT

ENCOURAGEMENT is another of the complementary strategies that SRTS programs use to increase the number of children who walk and bicycle to school. Encouragement activities are designed to generate interest and excitement about walking and bicycling safely to school. Encouragement and education strategies work hand-in-hand to promote walking and bicycling by rewarding children for their participation. Encouragement activities can be organized by parents, students, teachers or community volunteers.

Many types of encouragement strategies can be part of your SRTS program. They play an important role in helping to sustain SRTS programs by building community interest and enthusiasm for changes that might require more time and financial resources to implement. Special events, mileage clubs and contests and a variety of ongoing activities are simple and inexpensive ways for children, parents, and others to discover that walking and bicycling can be fun and easily fit into daily routines.

Montana's SRTS Program can provide noninfrastructure funds for a variety of encouragement activities including: publications, brochures, promotional items associated with public awareness campaigns; creating walking school bus program; and for incentive programs that encourage and educate children and parents about the safety and health benefits of walking and bicycling.

Some ideas for encouragement activities you might consider are described below.

Special Events

Special events are typically one-day activities designed to celebrate walking and bicycling to school. Walk to School Days, when the entire school is invited to abandon their usual ways of getting to school in favor of walking and bicycling to school, is one of the most notable types of special events. During Walk to School Days, families walk or bicycle from home or from common meeting spots. Signs, balloons and banners can be used to create a celebratory atmosphere at the school. When they arrive at the school, participants might be greeted by the school representatives, local officials, local "celebrities", or other volunteers, and receive healthy snacks or other small incentive items.

Special events help publicize SRTS and related issues and educate both families and the broader community about the benefits and joy of walking and bicycling safely to school. They may be held once a year, monthly, weekly, or several times during the year organized around specific days like Earth Day.

Information about participating in National Walk to School Day and other ideas for special events can be found at: http://www.walktoschool.org/index.cfm.

Mileage Clubs and Contests

Mileage clubs and contests encourage children to begin or to increase their current level of walking or bicycling. Generally children track the amount of miles they walk or bicycle and get an incentive (a small gift or a chance to win a prize) after a set mileage goal is attained. Mileage clubs and contests can be administered several ways including:

- Individually where each child logs the miles walked/bicycled and has a chance to win;
- By classroom where miles are collectively recorded for each classroom and compared to other classes; or
- As a competition among schools.

The "Big Sky Fit Kids" and "Walk and Bike Across America" are two notable mileage programs that might be appropriate for your SRTS plan.

"Big Sky Fit Kids" is affiliated with Montana's Big Sky State Games organization and is the youth component of the organizations "Shape Up Montana" program. Big Sky Fit Kids is a free, 3-month long, accumulated mileage contest that encourages youth teams to increase their individual physical activity levels and provides cash awards. Information about Big Sky Fit Kids can be found at: http://www.bigskygames.org/shapeup/bigskyfitkids/

"Walk and Bike Across America" is a web-based interactive game that promotes physical activity. The object of the game is for school classes (or entire schools) to accumulate miles by tracking the miles students walk and bicycle to school. Participants use those miles to travel around the U.S. visiting as many sites on the map as possible. Information about the program can be accessed at: http://www.saferoutestoschools.org/walk/

Ongoing Activities

Ongoing walking and bicycling activities are typically performed daily, weekly or several times per month throughout the school year. Walking school buses, bicycle trains, park and walk activities and walking at school programs are various types of ongoing encouragement activities. When planning, some schools choose more than one encouragement activity and include opportunities for children who cannot walk or bicycle to school from their homes.

Walking School Buses or Bicycle Trains. Walking school buses and bicycle trains are organized efforts that group children with adults who walk or bicycle to school with them. Walking school buses and bicycle trains can be loosely structured or highly organized and can be held as often as you want during the school year. They can be as simple as neighborhood families deciding to walk or bicycle together. More formalized walking school buses and bicycle trains typically have a coordinator to recruit volunteers and participants, create a schedule, and establish walking or bicycling routes. While requiring more effort, more structured walking

school buses and bicycle trains offer the opportunity to involve more children. Walking school buses and bicycle trains can also originate at a specified parking location so children and parents who must drive can participate.

Some key things to keep in mind:

- You need to identify a sufficient number of adults to supervise walkers or bicyclists. (The CDC recommends one adult per three children for children ages 4 to 6 and one adult for six children for older elementary children ages 7 to 9. For bicyclists, one adult per three to six children is advisable.

- You need to ensure bicycle train participants understand safe bicycling behaviors and wear helmets.

The Pedestrian and Bicycle Information Center for the Partnership for a Walkable America (in cooperation with the U.S. Department of Transportation) has compiled guidance and other useful information about starting a walking school bus. This information can be accessed at: http://www.walkingschoolbus.org/.

Park and Walk Programs. Instead of driving to school, families drive to a predetermined remote parking lot and walk the remainder of the way to school. Some park and walk programs require parents to walk with their children to school while others rely on designated adult volunteers to walk groups of children from the parking area to school.

Park and walk programs can help reduce traffic congestion around schools and provide a source of physical activity for both parents and children. This strategy is particularly helpful in cases where families live too far to walk or bicycle or if children do not have a safe route to school. Park and walk programs are a good way to encourage neighborhood involvement as area residents may be a good source of volunteers to walk children to school. Some other things to keep in mind:

- Park and walk programs require the identification or establishment of a safe route from the remote parking area to the school.

- Coordinate with the property owner(s) of the parking area you plan to use and get their permission before you start your park and ride program.

Walk at School Programs. Walk at school programs involve organized walks held on the school grounds during the school day such as during physical education classes or recess, or occur before or after school. Walk routes on the school grounds provide students with an opportunity to participate in an SRTS activity and increase their physical activity. This type of program may be particularly well suited for rural areas of Montana or other locations where conditions make it difficult or unsafe to walk to school.

Walk at school programs often establish goals for distance walked, amount of time, or number of days walked and may include incentives or rewards for participants.

Remember that ongoing activities at school typically require a school or volunteer coordinator and support from school administrators. Such activities may also require time from the daily schedule of school activities if a walk at school program is instituted during the allotted school day.

ENFORCEMENT

ENFORCEMENT activities are included in SRTS programs to help change unsafe behaviors of students, parents, and the driving public. Enforcement activities can increase driver awareness of laws and they also can improve driver behavior by reducing speeds and increasing yielding to pedestrians. In addition, enforcement activities help promote safe behaviors among young pedestrians and bicyclists and help them to pay attention to their environment.

Enforcement isn't the sole responsibility of law enforcement personnel and involves more than police officers being visible in school zones and writing speeding tickets. Enforcement includes students, parents, adult school crossing guards, school personnel and the community at large working together with law enforcement to promote safe walking, bicycling and driving. This can be accomplished through safety awareness, education and, where necessary, the use of ticketing for unsafe behaviors. Working together to enforce rules for safe walking, bicycling and driving makes it safer and easier for everyone to walk and bicycle.

Montana's SRTS Program can provide non-infrastructure funds to help increase enforcement efforts around schools. We suggest you contact MDT's SRTS Coordinator to discuss the enforcement activities you are considering and determine if funding assistance is possible.

The Role of Law Enforcement Agencies

As mentioned earlier in this Guidebook, involving law enforcement agencies is essential. Law enforcement officers see first hand the consequences of motor vehicle accidents and understand the behaviors that cause accidents. They have the ability to conduct education and enforcement campaigns to identify unsafe conditions and deter unsafe behaviors by drivers, pedestrians and bicyclists. However, the level of their participation in an SRTS program can vary depending upon the existing demands of each community and available resources. Local law enforcement agencies can be partners in SRTS programs and can assist by:

- Teaching safety behaviors to children, school officials, parents and the general community.
- Evaluating local traffic concerns, observing problem areas and behaviors and providing input about safe routes.
- Providing an enforcement presence that discourages unsafe behaviors along school routes and at school.
- Guiding the activities and duties of crossing guards.
- Monitoring students to ensure that they cross streets at safe locations and in a safe manner.

A visible presence by law enforcement agencies can go a long way towards improving safety for students along the school walk routes. Visible enforcement efforts remind drivers, pedestrians and bicyclists to follow the rules. To reinforce safe behaviors, law enforcement officers should visit the school and frequently patrol school routes and give warnings or tickets as they are warranted.

The Community's Role in Enforcement Efforts

All community members play a role in SRTS enforcement efforts and can help change unsafe behaviors. All adults in a community need to set good examples for their children and others by modeling safe pedestrian and bicyclist behaviors and following traffic rules while driving. Adults can volunteer to become crossing guards and help enforce safe behaviors at street crossing locations near schools and along school routes. Neighborhood residents can contribute by establishing speed watch programs. Speed watch programs (similar in concept to neighborhood crime watch programs) provide opportunities for residents to educate motorists about their driving speeds and show them their neighborhood is concerned about safety.

Law Enforcement Methods

A variety of law enforcement methods can be used to help change unsafe behaviors and make walking and bicycling to school safer and more attractive for children. Commonly used law enforcement methods are described below.

Examples of Portable Speed Trailer and Adult Crossing Guard

Adult Crossing Guards. As indicated above, crossing guards promote safe behaviors at crosswalks by helping children safely cross the street and by reminding drivers of the presence of pedestrians. Crossing guards help children learn and develop the skills to cross streets safely at all times. Adult school crossing guards can be parent volunteers, school staff or paid personnel. Training is essential to help insure that the guard performs his or her duties responsibly.

Montana's SRTS Program can provide funding to help you establish a crossing guard program, train crossing guards, and purchase equipment to increase their visibility.

Examples of Portable Speed Trailer

More information about crossing guards and their responsibilities and developing an adult crossing guard program for your school can be found at: http://www.saferoutesinfo.org/guide/crossing_guard/index.cfm

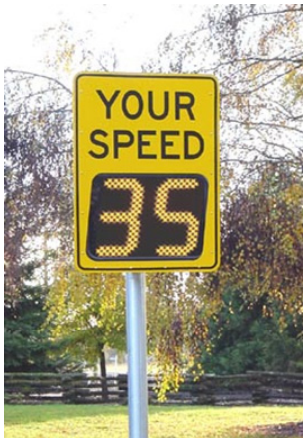
Portable Speed Trailers. Speed trailers are portable radar speed devices that display the actual speeds of approaching vehicles as compared to the posted speed limit. These devices are commonly used as a traffic calming measures in a variety of locations including school zones, construction or maintenance work zones, neighborhoods and high-accident areas where the speed limit must be enforced. The devices are typically powered by batteries or with solar panels.

Some speed trailers include changeable message signs capable of flashing messages like "Slow Down" or flashing lights to increase their effectiveness. Speed trailers can be effective in helping to reduce speeds and increase awareness of

local speed limits by providing immediate feedback to drivers. Some speed trailers have the capability to collect traffic count data and monitor travel speeds throughout the day. This data can be analyzed to identify critical times for traffic when more enforcement is needed.

Some manufacturers offer portable speed devices developed specifically for use in school zones. Such devices are typically mounted on a dolly that can be easily wheeled into the school after use a classroom or office for safekeeping and recharging. Portable speed trailers can be acquired with infrastructure funding under Montana's SRTS Program. Speed trailers typically cost between $5,000 to $10,000 depending upon their features.

Back-up speed enforcement may be needed when portable speed trailers are used. If a driver fails to slow when the sign tells them that they are violating the law, an officer may stop the driver and issue warnings to educate drivers or tickets for flagrant speeders.



Examples of Permanent Speed Monitors

Permanent Speed Monitors. Permanent radar speed monitors can also be installed near schools to keep drivers aware of their speeds and the need to slow down. The devices are typically mounted on a speed limit sign and visually display the speeds of drivers as they pass. Permanent speed monitors typically cost $3,000 or more depending upon the power source required for the device. Permanent speed monitors are not eligible for funding under Montana's SRTS program.

As with portable radar speed devices, permanent speed monitors may work well for a few weeks or even months, but drivers who frequently use the road or street may realize that driving at speeds in excess of the limit traveling if there is no law enforcement presence. Therefore, occasional police enforcement should also be employed in areas with radar speed devices to enhance the speed reduction capabilities of the speed monitors.

Traffic Complaint Hotlines. A traffic complaint hotline allows anyone in the community to report traffic problems directly to law enforcement agencies. Hotlines can help law enforcement agencies identify problem locations and unsafe driver behaviors. Police follow up hotline calls with enforcement in the identified area.

Progressive Ticketing. Progressive ticketing is a three-staged process sometimes used change unsafe driver behaviors that pose a threat to the safety of students. Such programs begin by educating the community about a safety concern and allowing time for driver behaviors to change. Law enforcement follows with a period when non-compliant drivers are issued warnings about their unsafe behavior. After prescribed period, drivers are ticketed when unsafe behaviors are detected.

Strict Speed Limit Enforcement in School Zones. Strict enforcement of speed laws in school zones is one law enforcement method that can improve the safety for children walking and bicycling to school and for drivers. Some states have

adopted a zero tolerance policy for speeders in school zones and have increased fines for drivers who violate the posted school zone speed limit.

ENGINEERING

ENGINEERING is a broad concept used to describe the planning, design, and implementation of methods and actions that can be used to create safe places to walk or bicycle and influence the behavior of pedestrians, bicyclists, and drivers. Engineering is a strategy that addresses the built environment through actions and physical improvements designed to address specific SRTS issues or problems. Engineering strategies are best used along with education, encouragement and enforcement activities.

Transportation engineers, planners and architects use engineering techniques and tools to create safer environments for walking and bicycling while balancing the need to provide roads and streets that safely accommodate all modes of transportation. Engineering strategies for SRTS generally includes physical improvements, traffic control devices, and the application of various design techniques to reduce traffic volumes, decrease vehicle travel speeds, and improve safety. Additionally, engineering can include maintenance and operational measures to existing facilities. When implemented, engineering actions and improvements may not only enhance safety for school children, but they also may encourage more walking and bicycling by the general public.

www.pedbikeimages.org/Portland Office of Transportation

This section of the Guidebook offers information about a wide range of engineering techniques and improvements that can be used to help create safer routes to school. According to MDT's current SRTS Program guidelines, we can help you implement some— but not all— of these engineering solutions. MDT's SRTS infrastructure funding can be used for new or improved pedestrian and bicycle routes, crosswalks, pathways, walkways, or trails on publicly owned property or easements within two miles of either an elementary or middle school.

This does not mean that other types of engineering solutions discussed are not appropriate ways to address SRTS problems. It just means other supplemental funding sources will be needed to implement such projects and improvements. Ideas for other SRTS funding sources are presented in Chapter 8 of this Guidebook.

Applying Engineering Solutions

The *SRTS Guide*, developed by the Pedestrian and Bicycle Information Center, recommends you consider the following principles when applying engineering solutions:

- **Infrastructure within the school zone and between home and school destinations is a necessity for walking and bicycling.** Children walk and bicycle to school from locations within approximately a 2-mile radius of schools. Infrastructure between home and school often determines whether children walk or bicycle to school. Children need well-designed, well-built, and well-

maintained facilities to safely walk or bicycle to school along streets/roads or separate paths, or to cross streets on the way to school.

- **Relationships are important.** The relationship between streets, sidewalks and crossings, and school buildings can determine the level of comfort and safety for pedestrians and bicyclists. Streets are connected to sidewalks and sidewalks and street crossings connect to school buildings. Conflict points are created on school routes at locations where vehicular traffic occurs between home and schools. Safe routes to school should have as few busy street crossings as practicable.

- **Easy to implement and low-cost solutions should be your first priorities.** Some engineering improvements, like the installation of new sidewalks and paths or the reconstruction of a street crossing, will require substantial time and financial commitments to implement and maintain. However, effective engineering treatments can have low costs and be easy to implement. For example, signs and paint for crosswalks are inexpensive and can make a big difference in safety. The completion of small, easy-to-implement and low-cost projects can build momentum and community interest in making other SRTS improvements. The SRTS planning process will help you identify long-term and expensive improvement projects and provides an opportunity to begin efforts to implement them.

- **Match engineering treatments to the type of problems identified.** As you consider improvements for the routes to school, care should be taken to identify problems or obstacles and to provide appropriate solutions to alleviate these specific problems. Make use of professional expertise and the other available technical resources to develop appropriate solutions.

Engineering in The School Zone

The school zone encompasses the school itself and surrounding areas where significant amounts of school-generated traffic can be expected. Typically, the school zone consists of the streets adjacent to the school and streets regularly crossed by students while walking to and from school. The school zone needs special treatment to ensure drivers are alerted to the possibility of encountering high numbers of children. School crossing signs, speed limit signs, school zone pavement markings and traffic calming measures are all used to remind motorists to be cautious in school zones.

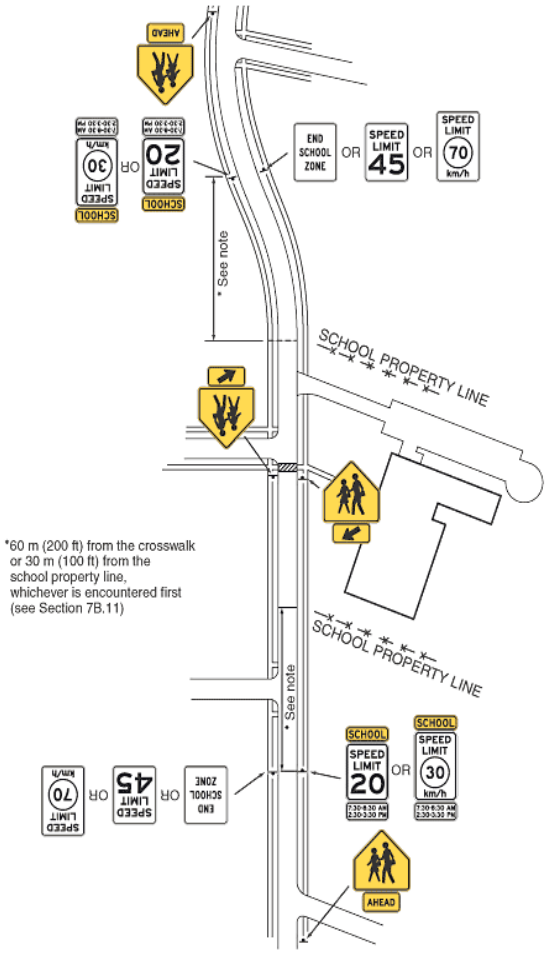
The *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD), Part 7 outlines the principles and standards for controlling traffic in the school zone. The MUTCD provides information on appropriate design, application, and maintenance of all traffic control devices (including signs, signals, and markings) and other controls (like adult school crossing guards) required in school areas. An example of school area signing is presented on the following page.

Note that school zone signing, markings, and traffic control devices are not identified as eligible infrastructure projects under MDT's current SRTS Program. However, other transportation monies may be available to help make engi-

neering changes within the school zone if your school is located adjacent to roads or streets on the designated statewide rural or urban road system. If not, implementing such improvements would be the responsibility of local governments.

School Zone Signs and Markings. School zone signs and pavement markings provide important information to drivers to improve safety within the school zone. The MUTCD provides national guidelines for signs and markings, and many states and local jurisdictions provide additional guidance. Some jurisdictions recommend or require school signs that are larger than the sizes of signs recommended by the MUTCD or may allow different types of pavement markings. School zone signs and markings on public streets must comply with the MUTCD as well as consider any relevant local or MDT guidelines.

Figure 7B-3. Examples of Signing for School Area Traffic Control with School Speed Limits



Source: *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD),* Chapter 7, 2003 edition.

School Area Speed Limit Signing. The main objective of school speed limit signs is to alert drivers that they are entering a school zone and they need to slow down for school children. The MUTCD provides guidance for installing school area speed limit signs in school zones at a specified distance from marked school crosswalks or a certain distance from the edge of school property.

Speed limits in school areas typically range from 15 to 25 miles per hour. The 15 mile per hour speed limit is posted to advise motorists that they are driving through an area designated as a school zone. The 25 mile per hour posting indicates that a driver is approaching or going through an area regularly crossed by students traveling to and from a particular school. These signs also typically note the times when these restricted speeds are in effect.

Overhead Beacon for Crosswalk

School Advance Warning Signs and School Crosswalk Signs. School advance warning and school crosswalk signs are used in advance of and at school crossings. Costs for school zone signing and markings vary depending on the treatment selected and how signs and markings are applied. The cost for signs generally ranges from $50 to $150 per sign plus installation costs. Pavement marking costs vary by type of paint chosen and marking design. Signs should not be overused or underused –overuse may result in noncompliance by drivers and excessive use of signs may create visual clutter. Signs need to be maintained and kept clear of tree branches and other visual obstructions.

Flashing Beacon on Pedestrian Crossing Sign

Conditions sometimes warrant the use of additional measures in the school zone to make drivers more aware of the presence of school zones. Methods to enhance typical school zone signs and markings are discussed below.

Overhead Signs and Flashing Beacons. School crosswalks with overhead signs or flashing beacons may be helpful in alerting drivers of a busy crossing on a wide or high speed street. Such installations can be used at mid-block crossings or at intersections with uncontrolled crossings. Overhead signs and beacons may be very effective at locations where approaching drivers cannot see the marked crosswalk due to topography or other reasons. Beacons can be designed to flash continuously all-day or set to flash only during crossing times. Flashing beacons are often attached to school zone speed limit signs and are activated during school hours. Flashing beacons that are activated only during school hours are probably more effective at drawing a motorist's attention compared to beacons that flash throughout the day.

Example of Portable In-street Sign

In-street Signing. In-street signs are plastic signs placed in the roadway to communicate variations of the basic message "Yield to Pedestrians" or "Stop for Pedestrians" in the crosswalk. In-street signs can be permanently installed in the roadway (in medians) or mounted on a portable base to allow them to be moved in and out of the street during the school day.

In-street signs are more effective on unsignalized two-lane, low-speed streets than on multiple-lane streets with higher travel speeds. These signs should be placed in advance of the crosswalk rather than in the crosswalk to make drivers aware of their responsibility to be cautious and stop at the crosswalk if needed.

When portable in-street signs are used for school crossings, they should be monitored by a school official or adult school crossing guard.

Standard Yellow School Sign

Retroreflective Yellow-green School Sign

Retroreflective Yellow-green Signs. High-visibility signing, often in retroreflective yellow-green color, is designated for school zones only instead of standard yellow signs. Such high-visibility signs attract the attention of drivers and can make the school crossings stand out. A guideline to keep in mind is that when retroreflective yellow-green signs are used, this color should be installed consistently throughout the school zone and not mixed with signs using the standard yellow school warning color. An example of the standard yellow school warning sign and corresponding retroreflective yellow-green signs are shown on this page.

Pavement Word and Symbol Markings. Pavement word and symbol markings installed in the driving lane are an effective way to provide further awareness to drivers near schools and reinforce existing signing. The text messages on the pavement in school zones vary but typically include "SCHOOL", "SLOW SCHOOL X-ING", "STOP", and the numerical speed limits.

Guidance and regulations for pavement markings are found in the MUTCD. Pavement words and symbols can be installed with white paint, thermoplastic, or preformed plastic tape. Using thermoplastic or other plastic materials may cost more initially, but such materials will last longer than paint and reduce long-term maintenance costs. In Montana, consideration must be given to the fact that pavement markings may be covered by snow at times of the year and that snow plowing may require routine maintenance to ensure the visibility of words and symbols.

Student Drop-off and Pickup Areas

Lines of vehicles waiting near the school, double parking, and turning or stopped vehicles backing up traffic are common scenes each day as school busses and parents drop off or pick up children. These conditions are often accompanied by unsafe driving behaviors that place children and other drivers at risk. Developing safe routes to schools requires an orderly process for dropping off and picking up children both at and near the school.

As a general strategy, it's most desirable to separate or eliminate conflicts between children arriving at school by walking or bicycling from those arriving by buses and private vehicles. This can be accomplished by providing adequate physical space for each mode used by students arriving at school and a separate routing for each mode of transportation. Providing sidewalks and bikeways away from lanes dedicated to buses and or those used by motor vehicles will reduce children's exposure to vehicle traffic.

Other measures that could be implemented to help separate vehicles from pedestrians and bicyclists at school include:

- Providing designated bus zones on the school site or adjacent street wherever sufficient room exists.

- Staggering arrival and departure times to help disperse peak traffic at schools.
- Arranging school facilities to eliminate or reduce the number of children walking through parking lots.
- Separating bus loading areas from parent drop-off/pick-up areas if possible.
- Providing designated drop-off and pick-up areas for students on the school site on a street adjacent to the school.

Engineering Along the School Route

Children walking or bicycling to school requires that safe and well-designed facilities be provided between their home and school. This section discusses the types of infrastructure that can improve conditions for walking and bicycling along school routes.

Sidewalks are essential elements of safe walking routes to school and provide pedestrians with space to travel within the public right-of-way away from motor vehicles. Sidewalks improve mobility for all pedestrians and provide access for pedestrian travel to schools, work places, parks, shopping areas, and other destinations. Sidewalks provide places for children to walk, run, skate and play, and are often used by young bicyclists. Parents are often not willing to allow their children to walk to school if there is no place for them to walk.

Streets without sidewalks, particularly those on desirable routes for walking to school, should be identified and evaluated to determine if adding sidewalks is feasible. Desirable characteristics of safe sidewalks are described below:

- Surfacing. Safe sidewalks have level, firm, stable, and slip-resistant surfaces. While concrete is the most common material used for sidewalks, they can be surfaced with other materials to accommodate varying budgets and situations. Asphalt, crushed stone, or other materials are suitable if they are properly maintained and do not impede those with mobility impairments.

- Width. The preferred minimum sidewalk width recommended for safe routes to schools is five to six feet. However, some municipalities have developed design standards that specify required widths for sidewalks.

- Placement. Sidewalks should be continuous and separated from motor vehicles by a curb, buffer or curb with buffer. Sidewalk placement along streets should take into account the space needed for snow storage so the sidewalk can remain useable when snowplowing is necessary.

- Sidewalk Buffers. The space between the sidewalk and closest lane of moving vehicles is the sidewalk buffer. Sidewalk buffers can include a planting strip for grass and trees, bicycle lanes, parking lanes, and areas for street furniture. If a sidewalk buffer does not exist, an effort should be made to provide a wider sidewalk.

- ADA Considerations. The *Americans with Disabilities Act* (ADA) requires agencies to make their transportation systems "accessible" for those with

disabilities. The ADA *Standards for Accessible Design* provides specific design requirements for sidewalks, ramps, street crossings, and trails which can all be features of safe accessible routes to school. ADA guidelines recommend two curb ramps at every intersection, one for each roadway to be crossed, rather than one curb ramp in the center. Two ramps direct pedestrians into the crosswalk rather than into the middle of the intersection. SRTS requires that all infrastructure projects be ADA compliant.

- Maintenance. Sidewalks and adjacent landscaping should be monitored for conditions that may hinder pedestrian use. Sidewalks that have been damaged by tree roots, ground swelling or heat buckling present a "tripping" hazard to pedestrians. Sidewalks must be smooth and in good repair to accommodate wheelchairs and sight impaired persons. A smooth sidewalk is also safer for strollers, young bicyclists, in-line skaters, and skateboarders. Properly maintained landscaping along sidewalks helps ensure appropriate sight distances and makes it easier for pedestrians to use the sidewalks.

Guidance for designing sidewalks can be found in the FHWA's *Designing Sidewalks and Trails for Access* and in the American Association of State Highway & Transportation Organization's (AASHTO's) *Guide for the Planning, Design, and Operation of Pedestrian Facilities*. The ADA *Standards for Accessible Design* can be accessed on line at: http://www.ada.gov/stdspd.htm.

Montana's SRTS infrastructure funds can be used for new or improved pedestrian routes; crosswalks, pathways, walkways, or trails on publicly owned property or easements. MDT's Community Transportation Enhancement Program (CTEP) can also provide funding for projects to develop or improve pedestrian facilities.

Street Lighting

Most school walking activity occurs during daylight hours. However, children may walk in the dark during the early winter months as they travel to school in the morning or return home after school activities conclude. Adding street lights can improve safety by allowing pedestrians and motorists to see each other. Street lighting also improves nighttime personal security and can be an aesthetic enhancement in school neighborhoods. On school routes, lighting is especially important at crosswalks. Street lighting is most beneficial in the following conditions:

- Arterial streets and other roadways with high traffic volumes, particularly near intersections.
- Streets or areas with high nighttime pedestrian activity, particularly where other high-pedestrian areas are also lighted.
- Streets or intersections with a high incidence of nighttime accidents, dark residential streets with high volumes of child and/or older adult pedestrians.

Street lighting is not specifically identified as an eligible infrastructure project under Montana's current SRTS Program.

Bicycle Facilities

Bicycling is an important way for children to travel to and from school and can be accommodated by both on-street and off-street facilities (paths). On-street facilities (like bicycle lanes and using paved shoulders) are more appropriate for older children with sufficient bicycle handling skills and an understanding of bicycle and traffic safety rules. A considerable amount of all bicycling occurs on the street system, and for children, most bicycling activity takes place on neighborhood streets where children live and go to school. Shared use paths often complement the street network.

Children of all ages, even high school students, will bicycle to school if given the opportunity. For this reason, it's important to consider all age groups including elementary, middle, junior high, and high school students when designating routes to encourage bicycling to school.

The *Guide for the Development of Bicycle Facilities* published by the American Association of State Highway and Transportation Officials (AASHTO) serves as an essential reference and provides information necessary for a safe bicycling environment including detailed information about the planning and designing all types of bicycle facilities.

Common types of off-road and on-road bicycle facilities are discussed below. Please remember not all are eligible for SRTS funding. **MDT's SRTS infrastructure funds can be used only for projects developing new or improved bicycle routes, crosswalks, pathways, walkways, or trails on publicly owned property or easements within 2 miles of K-8 schools; and to acquire bicycle storage racks.** Additional funding for bicycle facilities may be possible through the CTEP.

Separated Shared Use Paths and Bicycle Paths

Separated shared use paths can help link neighborhoods with schools and shorten the distance children must walk or bicycle. However, paths must be designed properly, especially where they intersect roadways, to minimize the risk of pedestrian and bicyclist crashes. Consideration also needs to be given to measures that prevent motor vehicles (except maintenance vehicles and emergency vehicles) off of the path.

Although shared use paths can vary in width, the recommended minimum width for a two-direction path designed for bicyclists and pedestrians is 10 feet. Eight feet is considered a minimum for shared use paths with low numbers of bicyclists and pedestrians. Pavement surfaces for multi-use paths can be asphalt or concrete.

MDT projects sometimes include the development of separated bicycle paths. The following MDT guidelines may be useful if consideration is being given to developing a bicycle path as part of your safe routes to school effort:

- high vehicular speed on adjacent roadway;
- high vehicular traffic volume on adjacent roadway;
- high percentage of trucks on the adjacent roadway;

- high bicycle traffic volume;
- substantial anticipated increase in vehicle and/or bicycle traffic;
- absence of suitable alternative routes;
- around schools, playgrounds, parks or other areas where children are expected;
- demonstration that the facility would serve a definite purpose; and
- reasonable indication that the bicycle path would be the safest and most economical method of providing a bicycle facility.

Guidelines for designing shared use paths are available from the FHWA's publication titled *Designing Sidewalks and Trails for Access – Part II: Best Practices and Design Guide* and from AASHTO's *Guide for the Development of Bicycle Facilities*.

Bicycle Paths Adjacent to Roadways. In the past, "bicycle sidepaths" (bikeways immediately adjacent to roadways) were developed with the idea of separating bicyclists from roadways in order to reduce opportunities for conflict. It is now widely accepted that bicycle paths immediately adjacent to roads actually cause greater conflicts. AASHTO states that there should always be a minimum of 5 feet between the separated paths and the roadway.

On-Road Bicycle Facilities

On-road bicycle facilities include bicycle lanes, shoulder bikeways, and wide curb lanes. These facilities are discussed in more detail below.

Bicycle Lanes. A bicycle lane is a portion of a roadway which has been designated by striping, signing and pavement markings for the preferred or exclusive use of bicyclists. Bicycle lanes are one-way facilities and carry traffic in the same direction as the adjacent motor vehicle traffic. Bicycle lanes are usually preferred in urban conditions and offer a comfortable riding space for older or more experienced children.

The minimum width of a bicycle lane should be 5 feet against a curb or adjacent to a parking lane. On streets where the bicycle lane is adjacent to the curb and the curb includes a 1-foot to 2-foot gutter pan, bike lanes should be a minimum of 4 feet wide. Bicycle lanes should not be wide enough to accommodate a motor vehicle as drivers may attempt to use a wide bicycle lane as a travel lane. Bicycle lanes should be designated through the use of signs or painted symbols and motor vehicle parking restrictions. Accommodating bicycle lanes within existing street cross-sections and roadway right-of-way may be difficult.
The following MDT guidelines may be of use when considering bicycle lanes in your community:

- moderate to low vehicular speed on adjacent roadway;
- moderate to low vehicular traffic volume on adjacent roadway
- moderate bicycle traffic volume;
- anticipated increase in bicycle traffic volume;
- insufficient land to construct bicycle paths without major disruptions on the surroundings;
- demonstration that the facility would serve a definite purpose; and

- an indication that the bicycle lane would be the safest and only feasible
- method of providing a bicycle facility.

Shoulder Bikeways. Paved shoulders are provided on rural highways for a variety of safety, operational, and maintenance reasons and provide a place for bicyclists to ride outside the travel lanes. In general, the shoulder widths recommended for rural highways in AASHTO's *Policy on Geometric Design of Highways and Streets* serve bicyclists well, since wider shoulders are required on heavily traveled and high-speed roads and those carrying large numbers of trucks. However, when providing shoulders for bicycle use, a width of 4 feet is viewed as the minimum for safety and a width of 6 feet is recommended and for safe ended to accommodate bicycle use.

While pedestrians can walk along shoulders, shoulders should not be considered a good substitute for sidewalks in urban areas.

Wide Curb Lanes. A wide curb lane may be provided where there is inadequate width to provide bike lanes or shoulder bikeways. To be effective, a wide lane must be at least 14 feet wide, but less than 16 feet wide. Usable width is normally measured from the curb face to the center of the lane stripe, but adjustments need to be made for drainage grates, parking, and the ridge between the pavement and gutter.

While bicycle lanes, wide shoulders, and wide curb lanes may be suitable for older and more experienced bicyclists, these on-road bicycle facilities are not ideal for children and young bicyclists.

Grade-Separated Crossings

Overpasses, bridges, and underpasses are sometimes necessary when children would otherwise be required to cross major roadways or high-speed arterial streets to safely travel to or from school. Pedestrian and bicycle overpasses and underpasses can range from short connections over streams to long bridges with extensive approach ramps over highways.

Installing a grade separated structure is often viewed as an appealing solution because pedestrians and bicyclists can be completely separated from motor vehicle traffic. However, grade separated crossings are often impractical due to their high costs (from several hundred thousand to several million dollars). Many other types of improvements that could benefit pedestrians and bicyclists (such as pedestrian refuge islands or illumination) can be provided for the cost of one such structure.

Grade separated structures also require consideration of other issues like ADA accessibility guidelines, security, drainage, lighting, and ongoing maintenance. Unless these structures are convenient and represent an attractive alternative to at-grade crossings, it is sometimes better to redesign existing at-grade crossings or modify traffic controls instead of building an overpass or underpass.

Due to their high costs, grade separated structures are not eligible infrastructure projects under Montana's SRTS Program. If you are considering a project

that includes such structures, please contact MDT's SRTS Coordinator for ideas about other potential funding sources.

Street Crossings

Since children rarely walk or bicycle to school without crossing a street, street crossings are a critical element of safe school routes. Wide, multilane roads represent significant barriers to walking and bicycling to school. Safe street crossings must be developed at visible locations where vehicle speeds can be slowed, crossing distances can be minimized, and appropriate traffic controls devices and pavement markings can be incorporated.

Title 61, Chapter 8, Part 5 of the **Montana Codes Annotated** (M.C.A.) includes provisions regarding the lawful behavior of motorists and pedestrians at crossing locations. Montana law requires drivers to yield the right-of-way, slow down or stop if necessary, for all pedestrians crossing the roadway within a marked crosswalk or within an unmarked crosswalk at an intersection when traffic control signals are not in place or operating.

Additionally, operators of motor vehicles are prohibited from:

- driving through a column of school children crossing a roadway or past a school crossing guard while the crossing guard is directing the movement of children across a roadway and holding an official sign in the stop position.

- overtaking and passing a vehicle stopped to permit a pedestrian to cross the roadway at a marked crosswalk or at an unmarked crosswalk at an intersection when approaching from the rear of the stopped vehicle.

Pedestrians are subject to traffic control signals and pedestrian control signals at intersections and must yield the right-of-way to vehicles when crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection. State law prohibits pedestrians from:

- crossing streets at any place other than in a marked crosswalk in areas between intersections controlled by traffic signals.

- walking along or on roadways if sidewalks are provided and their use is practicable.

If sidewalks are not provided, pedestrians may walk on the roadway shoulder or along the roadway, as far as practicable from the edge of the roadway.

Crosswalks

Marked crosswalks can increase safety for pedestrians by increasing the visibility of the crossing area, defining the portion of the roadway to be used for crossing, and directing pedestrians to the appropriate crossing locations. Marked crosswalks also alert drivers to an often-used pedestrian crossing. However, crosswalk markings alone are unlikely to benefit pedestrian safety. For this reason, crosswalk locations are frequently enhanced with raised islands, traffic and pedestrian signals, speed

restrictions, and street lighting.

On safe school routes, marked crosswalks should be provided at:

- all signalized intersections with pedestrian signal heads;
- all locations where a school crossing guard is stationed to assist children crossing the street;
- high pedestrian volume locations; and
- all other locations where there is a need to clarify the preferred crossing location.

According to the *SRTS Guidebook*, it is advantageous to install a marked crosswalk at an uncontrolled crossing when the crossing is located on a two-lane road or on a multi-lane road with average daily traffic (ADT) volumes less than 10,000 vehicles per day; on a road with speed limits of 40 mph or less, and along a school route.

In some areas where distances between intersections are long, mid-block crossing points provide pedestrians opportunities to cross safely. Mid-block crossings can also provide convenience and safety in less developed area, where pedestrian activity is high.

Crosswalks are typically marked with paint or a plastic or epoxy material embedded with reflective glass beads. Although more expensive, longer-lasting crosswalk marking materials are a better value over time as they require less maintenance. The minimum crosswalk width is six 6 feet, but school-related crosswalks should be wider at crossings with high numbers of students. Routine maintenance is required to ensure crosswalks are in good visible condition.

Enhanced Visibility Crosswalks. Various techniques are occasionally used to further alert drivers to crosswalks and enhance pedestrian safety at street crossings. Yield lines and set-back stop lines installed in advance of crosswalks are simple ways to improve a driver's view of the pedestrian in the crosswalk, reduce the number of motor vehicles encroaching on the crosswalk, and indicate that motorists should yield to pedestrians in advance of crosswalks. Stop lines are used in advance of marked crosswalks at signalized intersections, while yield lines are placed in advance of unsignalized crosswalks.

Another simple way to improve visibility of the crossing for both drivers and pedestrians is to restrict parking at corners adjoining the crossing. As a general rule, parking should be restricted for 20 feet in advance of marked crosswalks so pedestrians are visible to approaching drivers.

Crosswalks are sometimes defined by the use of different colored paving materials, stamped concrete, and brick or concrete pavers.

Crosswalks are eligible infrastructure projects under Montana's SRTS Program.

Traffic Control At Signalized Intersections

Traffic signals are the highest form of traffic control and provide sufficient time for safe and efficient pedestrian crossings. Traffic signals can help create safe routes to schools when used at busy intersections and by providing signalized crosswalks for children. Traffic signals provide the greatest benefit when:

- Crosswalks are marked on all legs of the intersection.
- Pedestrian signal (WALK/DON'T WALK) indicators are provided in all directions
- Pedestrian pushbuttons are provided where appropriate
- Safe areas with curb ramps are provided on each corner for people to wait.
- Stop bars in advance of marked crosswalks are provided.
- Street lighting is provided on all corners.

The phasing and/or timing of traffic signals can be adjusted to increase the amount of time available for pedestrians to cross, to give priority to the pedestrian at an intersection, and to provide separate periods for motor vehicle and pedestrian movements.

Signal Warrants. Recognize that traffic signals are expensive and their installation must be warranted. Signal warrants, the nationally-accepted minimum conditions that must be met in order for a traffic signal to be considered at an intersection, are identified in the MUTCD. An intersection must meet at least one warrant to be a candidate location for a traffic signal. Failure to meet any warrants indicates a signal should not be installed and other means of traffic control may be better suited for the intersection.

When traffic signals are installed at appropriate locations they should improve pedestrian safety and also reduce the severity of motor vehicle crashes. However, it has been well documented that signals can also cause an increase in other types of accidents (notably rear-end collisions).

Pedestrian signals are installed in response to high numbers of pedestrian crossings at an intersection or because traffic signals do not meet the needs of the pedestrians.

Traffic Signals and Adult School Crossing Guards. Traffic signals along a school route are good places to provide adult school crossing guards. Crossing guards help children safely cross at key street locations and remind drivers of the presence of pedestrians. These activities can lead to more parents feeling comfortable about their children walking and bicycling to school.

Pedestrian Pushbuttons. Pedestrian pushbuttons (typically installed with pedestrian signals) are electronic buttons used by pedestrians to change traffic signal timing to accommodate street crossings. Vehicle traffic is not delayed if pedestrians are not present to signal the need for crossing. These devices are used at locations where there are significant numbers of pedestrians or where actuated signals do not automatically allocate sufficient pedestrian crossing time during all phases unless a pedestrian is present. If used, they should be clearly visible and within easy reach for people in wheelchairs.

Countdown Pedestrian Signals. Countdown pedestrian signals consist of a standard pedestrian signal with an added display that shows the countdown of the remaining crossing time. The countdown timer starts either at the beginning of the pedestrian phase or at the onset of the flashing DON'T WALK indication. The timer continues counting down through the pedestrian clearance interval. At the end of the pedestrian clearance interval, the countdown device displays a zero and the DON'T WALK indication or solid red hand appears. Countdown pedestrian signals may be of particular benefit on wide multi-lane streets.

Traffic control devices are not eligible infrastructure projects under Montana's current SRTS Program. New traffic signal installations or modifications to existing signals are usually the responsibility of local governments. MDT would be involved if affected roads or streets are part of the designated statewide rural and urban road systems.

Ways to Reduce Crossing Distances

The distance required to cross a street and the length of time that a pedestrian is exposed to traffic can be reduced with curb extensions and crossing islands. Curb extensions (also known as curb bulbs or bulb-outs) physically reduce the distance pedestrians must walk in the street. Pedestrian refuge islands (also known as crossing islands) allow wide streets to be crossed in two stages.

Curb Extensions (Curb Bulbs/Curb Bulbouts). Curb extensions are only appropriate where there is an on-street parking lane. Curb extensions narrow the roadway and reduce the crossing distance by extending the sidewalk area across the parking lanes to the edge of the travel lanes. Curb extensions prevent motorists from parking too close to the intersection and help improve the visibility of pedestrians waiting to cross by bringing them out from behind parked cars.

Pedestrian Refuge Islands. Pedestrian refuge islands are raised areas placed in the center of the roadway separating opposing lanes of traffic. Refuge islands can be located at intersections or mid-block. Refuge islands are designed with a gap level with the street to allow wheelchairs and pedestrians to cross through the island. At signalized crossings, pedestrian push buttons are often placed on the refuge island.

Refuge islands provide a sheltered area where pedestrians may wait outside the traveled way until vehicular traffic clears, allowing them to cross the street in two stages. They allow pedestrians to focus on one direction of traffic at a time and allow drivers to clearly see pedestrians. Pedestrian refuge islands are particularly suitable for wide two-way streets with multiple lanes of moving traffic traveling at higher speeds. They are particularly useful to persons with mobility disabilities, very old or very young pedestrians who walk at slower speeds, and persons who are in wheelchairs.

Traffic Calming

One of the biggest challenges in providing children with safe walking and bicycling routes to school involves slowing down traffic. Slowing motor vehicle speeds not only reduces the chance of a crash due to the shorter stopping distance that is required, but it also reduces the chance of a pedestrian fatality or serious injury. Traffic calming tools—design and engineering strategies—can be used to help slow down traffic. The FHWA describes "traffic calming" as the combination of mainly physical measures that reduce the negative effects of motor vehicle use and improve conditions for non-motorized street users (pedestrians and bicyclists).

Traffic calming techniques to help slow down traffic are identified and described below including:

- Roadway Narrowing
- Chokers and chicanes
- Speed Humps and Speed Tables
- Neighborhood Traffic Circles

Roadway Narrowing. Narrowing the roadway can help reduce vehicle speeds along a roadway section and enhance movement and safety for pedestrians and bicyclists. Roadway narrowing can be accomplished by several methods including reducing travel lanes (to 10 or 11 feet) in width and striping the excess roadway as a bicycle lane or shoulder; removing lanes; adding painted medians, center turn lanes or parking lanes; or changing the road's cross-section by moving curb lines.

Chokers and chicanes. Chokers and chicanes can be used to narrow streets. Chokers (curb extensions similar to curb bulb-outs at intersections) narrow both sides of the street to form a section of about 20 to 24 feet wide. The least intrusive choker is a narrowing on either one or both sides of the road which still permits two way traffic.

Chicanes use a series of curb bulbs placed on alternating sides of the street and staggered to create a curved driving path similar to a slalom. Chicanes help reduce vehicular speeds by requiring motorists to maneuver through the curb bulbs. Both chokers and chicanes need to incorporate vertical elements in the narrowed sections such as landscaping or lighting so the narrowed section can be seen easily by approaching motorists. Chokers and chicanes should not be used if it will result in the loss of bicycle lanes or badly needed on-street parking.

Speed Humps and Speed Tables. Speed humps are rounded raised areas of pavement typically 12 to 14 feet in length with typical heights of 3 to 4 inches placed in mid-block areas. While effective at reducing motor vehicle speeds, speed humps are generally disliked by many motorists and emergency service providers and present problems for drainage and snow plowing. The presence of speed humps also makes resurfacing streets more difficult. Pavement markings and advance signing are often used where these features have been installed. Speed humps should not be used on major roads, bus routes, or primary emergency response routes.

Speed tables are similar to raised crosswalks which were described earlier in this chapter. The most popular speed table is 22 feet in the direction of travel including 6-foot ramps on each side and a 10-foot flat top. Speed tables can be negotiated easier than speed humps by emergency response vehicles.

Neighborhood Traffic Circles. Traffic circles are relatively small circular or oval islands (usually landscaped) placed at the center of intersections of local and/or collector streets. Their primary purpose is to reduce speeds through an intersection or, if used in a series, reduce speeds for several blocks. Because they are located in the middle of two streets, they give motorists the impression the approaching streets may not be through streets. Traffic circles are different from "roundabouts", the latter being a more formalized version of a circle which are usually installed on higher-volume streets.

Traffic calming measures like these are not specifically identified as eligible infrastructure projects under Montana's current SRTS Program.

More information about these and other traffic calming measures can be found online at the following websites:

http://www.fhwa.dot.gov/environment/tcalm/
http://www.ite.org/traffic/default.asp
http://www.trafficcalming.org/

Selecting Countermeasures

Appropriate education, encouragement, enforcement and engineering strategies should be selected based on issues and problems identified through parent and student surveys, observations at school and on routes used for walking and bicycling to school, and a thorough review of the other data you've collected. Analyzing this information and considering the wide variety of countermeasures or treatments available to improve safety for pedestrians and bicyclists will enable you to select a strategy to address specific problem areas or issues.

Two websites sponsored by the FHWA can assist you in identifying specific engineering, education and enforcement countermeasures that may be implemented to help improve conditions for pedestrians and bicyclists. This information is available through the following websites:

http://www.walkinginfo.org/pedsafe/ -- (PEDSAFE)
http://www.bicyclinginfo.org/bikesafe/ -- (BIKESAFE)

The PEDSAFE and BIKESAFE websites provide valuable information for identifying safety and mobility needs and improving conditions for pedestrians and bicyclists. Both PEDSAFE and BIKESAFE are organized in a similar manner and include the following elements:

- Selection Tool – Allows viewers to find appropriate countermeasures based on desired objectives and specific location information.
- Interactive Matrices – Allows viewer to research countermeasures associated with crash types and performance objectives.

- Countermeasures – Allows viewers to see descriptions of numerous engineering, education, and enforcement treatments.
- Case Studies – Allows viewers to see real-world examples of implemented treatments.

PEDSAFE and BIKESAFE are intended primarily for use by engineers, planners, safety professionals, and decision-makers, but it may also be useful to citizens for identifying problems and recommending solutions for their communities. Examples of the Interactive "Objectives Matrices" from the PEDSAFE and BIKESAFE are shown on the following pages.

If crash data is available, the PEDSAFE and BIKESAFE websites allow potentially effective countermeasures to be selected on the basis of crash types. These websites also present numerous case studies that illustrate the concepts applied in practice in a number of U.S. communities.

APPENDIX C presents a variety of engineering measures that can be used in conjunction with SRTS programs to accomplish a variety of objectives benefiting both pedestrians and bicyclists.

Example of "Objectives Matrix" from PEDSAFE

Objective / Countermeasures	Pedestrian Facility Design	Roadway Design	Intersection Design	Traffic Calming	Traffic Management	Signals and Signs	Other Measures
1. Reduce Speed of Motor Vehicles	•	•	•	•		•	•
2. Improve Sight Distance and Visibility for Motor Vehicles and Pedestrians	•	•		•		•	
3. Reduce Volume of Motor Vehicles		•		•	•		
4. Reduce Exposure for Pedestrians	•	•		•		•	
5. Improve Pedestrian Access and Mobility	•	•		•		•	
6. Encourage Walking by Improving Aesthetics	•	•		•			•
7. Improve Compliance With Traffic Laws			•	•			•
8. Eliminate Behaviors That Lead to Crashes			•	•		•	•

Example of "Objectives Matrix" from PEDSAFE

Objective \ Countermeasure Group	Shared Roadway	On-Road Bike Facilities	Intersection Treatments	Maintenance	Traffic Calming	Trails/Shared-Use Paths	Markings, Signs, Signals	Education and Enforcement	Support Facilities and Programs
1. Provide safe on-street facilities/space for bicyclists.	•	•		•	•		•	•	•
2. Provide off-road paths or trails for bicyclists.				•		•	•	•	•
3. Provide and maintain quality surfaces for bicyclists.	•			•			•	•	
4. Provide safe intersections for bicyclists.	•		•		•	•	•	•	
5. Improve motorist behavior/ compliance with traffic laws.	•		•	•	•		•	•	•
6. Improve bicyclist behavior/ compliance with traffic laws.	•	•	•	•	•	•	•	•	•
7. Encourage and promote bicycling.	•	•		•		•	•	•	•

U.S. Department of Transportation
Federal Highway Administration

SUGGESTED OUTLINE FOR YOUR SRTS PLAN

The SRTS Plan is at the heart of successful SRTS programs. SRTS Plans identify the problems or conditions that keep children from walking or bicycling to school and identify a plan of action incorporating each of the "5 E's" to increase walking and bicycling to school and make such trips safer and healthier. The actions identified in plans will often include safety education and training for children, drivers, encouragement activities, new enforcement measures, new or improved facilities, and safety improvements to the physical environment at or near the school.

SRTS Plans elaborate your goals and often include specific objectives by which to gauge your progress and overall success. SRTS Plans are intended to establish the path towards implementing action-oriented solutions that increase walking and bicycling to school, as well as to define who will be involved in that effort and their respective roles. They help your school and community set priorities and publicize findings to create community support.

In addition, SRTS plans may help you secure funding for activities and projects you included in your plan. Chapter 9 of this Guidebook will provide more information about how important SRTS Plans are when applying for Montana's SRTS funds.

Comprehensive SRTS Plans usually include the following information:

<u>DESCRIPTION OF EXISTING CONDITIONS</u>

- Basic community and School Information

- Location of school(s)
- Environment type (urban, suburban, rural)
- Community Demographics
- Type of school (elementary, middle)
- Map of school and its neighborhood (enrollment boundaries)
- Student data for each school, including, but not limited to:
  - total number of students
  - % students within 2 miles
  - % students participating in a free/reduced lunch program
- Map showing current walking and bicycling routes to school(s).
- Current travel modes from student survey results
- School walking and bicycling policies

VISION FOR SRTS

- Goals and objectives
- Defined performance targets

IDENTIFICATION OF EXISTING PROBLEMS OR NEEDS

- Detailed analysis of existing conditions and impediments to safe walking or bicycling (physical barriers, safety issues, awareness) from walking and bicycling audits, school site audits, and parent and student surveys
- Traffic counts, speed data, crash data (injuries and/or fatalities) and other relevant data (traffic citations, etc.)
- Parent and student desired travel modes
- Photographs of problem areas on walking or bicycling routes to school

RECOMMENDATIONS FOR IMPROVEMENTS

- Recommended strategies to address identified issues and problem areas and meet stated SRTS goals and objectives. These strategies should be organized to demonstrate that evaluation, education, encouragement, enforcement, and engineering are considered.
- Potential developments and/or improvements to safe walking and bicycling routes to a school(s)

IMPLEMENTATION

- Long-term and short-term priorities
- Responsibilities and tasks for enacting the plan
- Timeline for implementing activities and projects Potential funding sources for activities and projects

EVALUATION, COORDINATION, AND SUPPORT ACTIVITIES

- Activities that address the monitoring, review, and updating the SRTS Plan
- Plan for how the SRTS actions will be sustained
- Methods and measures of success for the strategies included in the SRTS Plan
- Identification of SRTS stakeholders and how they might contribute to implementing the plan
- Outreach and publicity actions to demonstrate coordination efforts have already occurred and will continue with stakeholders and potential partners.

CHAPTER 7: MEASURING SUCCESS

CHAPTER 7: MEASURING SUCCESS

As you undertake and complete your program, SRTS stakeholders will want to know: "Are we making a difference? "Were we successful? Are children safer and healthier because of what we did?" Providing answers to these questions requires evaluations to track progress and to compare behaviors or conditions before and after you implement your SRTS project or activity.

You should recognize by now that evaluation is an essential and important component of all successful SRTS programs. MDT's SRTS Program requires an evaluation (or assessment) at the start of your efforts to document existing conditions and identify areas of concern. The program also requires a commitment from participants to provide progress reports at appropriate intervals during the activity or project and before-and-after evaluations of SRTS activities or projects. Meeting these commitments is really about gauging the effectiveness of your actions, getting feedback on what you've done, and measuring the overall success of your hard work.

With the information learned through ongoing and before-and-after evaluations, your SRTS Team can focus its effort and resources on the most critical problems and the most effective countermeasures. You'll be able to create responsive programs, to adjust activities or projects as needed, to monitor progress toward meeting your goals and objectives, and ultimately, judge the outcome of your efforts. Additionally, evaluations generate the information needed to demonstrate to those funding SRTS efforts that their dollars have been well-spent.

INDICATORS OF SUCCESS

A major purpose of any evaluation is to determine if your activities and projects accomplished their objectives. As discussed in Chapter 5 of this Guidebook, well-written objectives are measurable and often include performance targets. Performance targets identify what you hope to achieve in a given period through your SRTS efforts. They signal what you consider to be important changes and are your defined benchmarks for success.

The ongoing collection and evaluation of useful data is required to measure progress toward meetings your performance targets and gauging the overall success of your SRTS efforts. If your evaluation shows that you did not meet specific performance targets you set or make positive progress towards your goals, then you should review the strategies you used. Perhaps the techniques you chose to employ were less effective than other options and you need to try a different approach in the future.

Table 7-1 identifies a variety of desired outcomes associated with SRTS programs and lists various indicators to consider when evaluating your efforts. The table also lists several tools you can use to measure changes in behaviors and conditions at or around schools.

Figure 7-1: Key Indicators of Success for SRTS Programs

Outcome	Indicators (Measure Before & After)	Desired Direction of Change	Measurement Tools
Behavior of Children	Numbers of children walking to and from school	More	Student Surveys Observations Testing before and after training provided
	Numbers of children bicycling to and from school	More	
	Skills for walking and bicycling safely	Better	
Behavior of Drivers	Numbers of vehicles arriving and departing school at morning drop-off and evening pick-up times	Fewer	Observations on Streets near school Measurements with speed monitoring equipment Parent Surveys
	Speed of vehicles in and around the school area	Slower	
	Aggressive driving behavior (e.g., not yielding to pedestrians)	Less	
	Number of driving trips by parents and length of morning and evening commute	Less	
Community Facilities	Number of traffic crashes involving children walking or biking to and from school	Lower	Community crash data Number of traffic stops by law enforcement
	Severity of injuries to children from traffic on their way to and from school	Less severe	
	Number of conflicts between motorists and pedestrians/bicyclists	Lower	
Community buy-in	Number of different types of people involved in the SRTS effort	More	Observations Before and After Surveys
	Level of commitment and energy displayed by the SRTS collaborators	Higher	
	Parent enthusiasm about SRTS and allowing their children to walk or bike	Higher	
Environmental quality	Level of air and noise pollution in school area	Lower	Air quality monitoring Observations Before and After Surveys
	Land devoted to parking and drop-off/pick-up areas	Less	

Adapted from: Safe Routes to School: Practice and Promises

FINAL THOUGHTS ABOUT EVALUATIONS

Ensure the program objectives that you set at the start of your SRTS effort are reflected in your evaluation. Revisit your overall goals since they will help guide you toward what evaluation activities to undertake.

Involve stakeholders in the evaluation process. SRTS stakeholders often represent a diverse group and may be interested in finding out information unique to their areas of interest.

Put the findings of your evaluation to good use. The information you learn from your evaluation can help target changes in your SRTS activities or establish new or different directions for your efforts. Share the results of your evaluation with your school board and elected officials in the community. This may be a way to impress decision makers and others and increase their interest in working with you on SRTS issues.

Evaluations are not just about showing success or failure. No programs or activities are perfect. Evaluations are really about looking for ways to continually improve your SRTS program and get feedback on your work.

CHAPTER 8: FUNDING SRTS

CHAPTER 8: FUNDING SRTS

OVERVIEW

Funding SRTS involves identifying needs and setting priorities, matching identified needs with applicable grant programs, and allocating available transportation funds for pedestrian and bicyclist safety improvements in a cost-effective manner. Considering how funding opportunities change, it is essential to explore as many sources as possible.

Some elements of SRTS programs will cost very little. Many low-cost engineering solutions like new traffic control signs or painting crosswalks can be quickly implemented. Alternately, some projects like the construction of new sidewalks or bicycle paths, may require large amounts of funding and spending considerable time and effort just to secure funds.

Most SRTS projects rely on a mixture of funding from a variety of sources including:

- City and County funding
- School Districts
- State programs (like SRTS and CTEP)
- Other Federal-aid highway programs allocated through SAFETEA-LU
- Environmental and air quality funds
- Health and safety organization funds
- Grants from philanthropic organizations
- Private donations

SRTS programs make use of infrastructure and noninfrastructure funds. Infrastructure funds are typically used to make physical improvements benefiting pedestrians and bicyclists around schools and along school routes. These funds include many actions and projects intended to enhance the walking and bicycling environment for students such as installing sidewalks or crosswalks, fixing hazardous facilities, or implementing traffic calming measures near schools. Infrastructure funds usually come from local governments or from federal and state programs.

Noninfrastructure funds are used to implement evaluation, education, encouragement, and enforcement activities for SRTS programs. These activities might consist of assessments to identify and monitor problems, in-school safety education, health and environment training, public outreach activities, traffic enforcement, train-the-trainer safety programs and other related activities.

Local governments may choose to fund SRTS efforts or organizers can seek financial contributions from other groups. Some local non-profit groups may be willing to help fund SRTS efforts because the programs can benefit the community as a whole by relieving traffic congestion, improving the environment, creating alternative transportation routes, and improving the overall health of local residents.

Both infrastructure and noninfrastructure funds are available from numerous sources, including Montana's Safe Routes to School program. Notable SRTS funding resources are discussed below.

LOCAL FUNDING RESOURCES

Most facilities, provisions, and programs for pedestrians and bicyclists are implemented at the city or county level. Common sources of local funding for improvements that may benefit SRTS programs are discussed below.

Local Revenues. The primary local revenue sources of cities, towns, and counties are general funds resulting from mill levies on real and personal property and motor vehicles; licenses and permits; state and federal intergovernmental revenues; intergovernmental fund transfers; and charges for services. Although most of the general fund monies designated for roads or streets are oriented toward maintenance activities, some new construction and improvement projects may be financed with such funds through agencies like the Publics Works or Parks Department. Since demand for funds often exceeds available revenues, designing and building new pedestrian and bicycle facilities may not always be high priorities for many local governments.

Most local governments have street or road departments that may be able to help complete some inexpensive SRTS improvements such as striping crosswalks, installing signs, or marking bicycle lanes on local roads or streets with adequate width.

Fuel Tax Revenues. The State of Montana currently assesses a tax of $0.27 per gallon on gasoline and diesel fuel used for transportation purposes. Each incorporated city and town and county receives a portion of the total tax funds allocated based on formulas considering its population, street or road mileage, and land area (for counties only) relative to all other incorporated cities and towns or counties.

All fuel tax funds allocated to city and county governments must be used for the construction, reconstruction, maintenance, and repair of city streets and alleys or rural roads. The funds may also be used for the share that the city or county might otherwise expend for proportionate matching of Federal funds allocated for the construction of roads or streets on the Primary, Secondary, or Urban Systems.

Priorities for the use of fuel tax revenue are established by the cities and counties receiving them.

Special Bond Issues. Revenues for improving walking and bicycling conditions can also be generated through bond issues. Cities have commonly floated bonds for their urban parks, trails and other recreational amenities. Increasingly, bond issues are being used to secure open space, develop trails and paths, and implement other improvements benefiting pedestrians and bicyclists. Several local governments in Montana including the City of Helena and Gallatin, Missoula and Ravalli Counties have passed such bond issues.

Other Specialized Taxes. Other specialized tax revenues can improve pedestrian and bicyclist facilities. For example, the City of Whitefish is designated as a "resort community" and under Montana law is authorized to levy taxes on goods and services related to tourism. The City uses these resort tax revenues for property tax relief and to fund infrastructure improvements including the development of pedestrian and bicycle trails.
Some communities have also enacted tax increment districts to collect additional revenues on properties within a prescribed area. The revenue generated through such taxes is designated for infrastructure improvements and other projects within the district.

PRIMARY STATE FUNDING RESOURCES FOR SRTS

Montana's SRTS Program. Federal legislation in August 2005 created a national Safe Routes to Schools Program and authorized funding for the program through the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act* (SAFETEA-LU). Along with other Federal-aid highway apportionments, the State of Montana receives an annual funding apportionment for SRTS from the FHWA. Montana's annual SRTS apportionment is approximately $1 million for fiscal years 2005-2009.

Montana's SRTS Program provides funding for noninfrastructure and infrastructure projects through a competitive application process. Noninfrastructure (behavioral) projects include community assessments, development of community action plans, tracking and performance monitoring, public awareness campaigns, bicycle and pedestrian safety, health and environment training, incentive programs, and enforcement efforts, including portable speed trailers. Infrastructure projects include crosswalks, sidewalks, pathways, and bike racks. All infrastructure projects must be publicly accessible, within 2 miles of a K–8 school, and maintained by a local government.

Applications for SRTS funding must be prepared and submitted to MDT. Eligible applicants for SRTS infrastructure funding include local governments and school districts. Eligible applicants for noninfrastructure funding include state, local and regional agencies, school districts, private schools, and nonprofit organizations.

The Montana's SRTS Program is a 100% federally funded reimbursement program and does not require a local match. Recipients of SRTS funds must front the cost of the project and will be reimbursed during the course of the project. All costs submitted for reimbursement are subject to eligibility requirements. Any costs incurred before written MDT authorization for the project are not eligible for reimbursement.

Successful local efforts will use SRTS Program funds to attract, combine and apply other funding resources to help accomplish needed SRTS projects and activities. The amount of funds available through Montana's SRTS Program will help you get a good start on your SRTS efforts but is unlikely to be enough of a financial resource to help achieve all of your goals and objectives. For this reason, applicants are encouraged to maximize SRTS projects by combining SRTS funding with other funding sources, like local allocations from Montana's Community Transportation Enhancement Program (CTEP). More information about CTEP can be found below.

For a copy of the current SRTS application form and information about Montana's SRTS program and its requirements, go to http://www.mdt.mt.gov/pubinvolve/saferoutes or contact MDT's Safe Routes to School Coordinator at 1-877-935-7233.

Montana's Community Transportation Enhancement Program (CTEP). MDT is responsible for administering federal funds allocated to the state for transportation-related projects designed to strengthen the cultural, aesthetic, and environmental aspects of Montana's multimodal transportation system. Federal legislation requires that 10% of the Surface Transportation Program (STP) funds each state receives annually must be spent on eligible projects in 12 designated Transportation Enhancement categories. Three of the CTEP eligibility categories could relate directly to activities associated with SRTS programs including:

- Pedestrian and bicycle facilities
- Preservation of abandoned railway corridors (including the conversion and use for pedestrian or bicycle trails)
- Safety education activities for pedestrians and bicyclists

Public pedestrian and bicycle routes, pathways, and walkways are eligible for CTEP funding. Funds can also be used for construction of new, or replacement of old, sidewalks on publicly owned property or easements. Facilities may be used for bicycles and/or pedestrians and should primarily be for general transportation from one point to another and not for recreational purposes. Other eligible uses of CTEP funds include bicycle racks, benches for pedestrian or bicyclist use, and other bicyclist- or pedestrian-related amenities.

The CTEP program is not a grant program. It is a federally-funded reimbursement program and requires a local match of 13.42%. The MDT has elected to sub-allocate transportation enhancement funds to local and tribal governments for selection and prioritization of local CTEP projects. Funds are distributed to the eligible local governments based on population figures from the U.S. Bureau of the Census.

Communities seeking Montana's SRTS Program funds are encouraged to prioritize their CTEP allocations for bicycle and pedestrian facilities close to schools. Ideally, both programs will complement each other with the majority of funding for infrastructure coming from locally prioritized CTEP allocations and funding for the evaluation, education, enforcement, and encouragement components coming from the SRTS Program.

For additional information about Montana's CTEP program and its requirements, go to http://www.mdt.mt.gov/business/ctep/default.shtml or contact program staff at (406) 444-4221.

OTHER FEDERAL-AID HIGHWAY FUNDING PROGRAMS

Bicycling and walking are recognized by the U.S. Department of Transportation as important elements of an integrated, intermodal transportation system. Building sidewalks, teaching children to ride and walk safely, installing curb cuts and ramps for wheelchairs, striping bicycle lanes and building trails all contribute to meeting national transportation goals. For these reasons, pedestrian and bicycle infrastructure may also be developed in association with projects receiving other categories of Federal-aid transportation funding.

As with the SRTS and CTEP funds, the FHWA (and MDT) administers a variety of other Federal transportation funds authorized by SAFETEA-LU. A description of each source follows.

State Highway System Funding. Federal transportation funds are available for designated state highway systems in Montana including the Interstate System, National Highway System (NHS) and Primary (STPP), Secondary (STPS), and Urban (STPU) Systems. While program requirements vary somewhat by system, activities eligible for funding typically includes construction, reconstruction, resurfacing, restoration, rehabilitation work and operational improvements. Projects may include components that provide or enhance pedestrian and bicyclist facilities.

Improvements to these systems are funded with both federal and state funding. The federal share of funding for projects on the NHS, STPP, STPS, and STPU Systems is 86.58% and the State is responsible for the remaining share of 13.42%. Funding for projects on each highway system are generally allocated to five financial districts in the state based on project priorities or processes established by the Montana Transportation Commission. STPU funds are allocated only to the 15 designated urban communities in Montana.

MDT and county commissions cooperatively determine priorities for projects on the STPS System in each financial district and priorities for the use of STPU funds are established at the local level through local planning processes.

STPHS - Surface Transportation Program - Hazard Elimination. The purpose of the Federal Hazard Elimination Program is to identify hazardous locations throughout the states highway system, assign benefit/cost ratio priorities for the correction of these hazards, and implement a schedule of projects for their improvements. Hazard Elimination projects are funded with 90% Federal funds and 10% State funds.

Projects eligible for funding under the Hazard Elimination Program include any safety improvement project on any public road; any public surface transportation facility or any publicly owned bicycle or pedestrian pathway or trail; or any traffic

calming measure. MDT's Traffic & Safety Bureau selects the projects by identifying high hazard sites through the analysis of law enforcement accident reports. Sites with a cluster of accidents over time are field reviewed and an appropriate type of corrective action is determined. The cost of the proposed Hazard Elimination project is compared to the potential benefit of the action. Once the benefit/cost ratio is calculated for all high hazard sites statewide, the projects are prioritized from highest to lowest and the projects are funded in this order until the yearly funds are exhausted.

CMAQ – Congestion Mitigation & Air Quality Improvement Program. Federal funds available under this program are used to finance transportation projects and programs to help meet the requirements of the *Clean Air Act*. Eligible activities include transit improvements, traffic signal synchronization, bicycle and pedestrian projects, intersection improvements, travel demand management strategies, traffic flow improvements, and public fleet conversions to cleaner fuels. A requirement for the use of these funds is the estimation of the reduction in pollutants resulting from implementing the program/project. Bicycle and pedestrian facilities and programs may include the following activities:

- Constructing bicycle and pedestrian facilities (paths, bike racks, support facilities, etc.) that are not exclusively recreational and reduce vehicle trips.
- Non-construction outreach related to safe bicycle use.

At the project level, the use of CMAQ funds is not limited to a particular system (i.e. Primary, Urban, and National Highway System). The Federal share for most eligible projects is generally 80%.

CMAQ funds were initially designated for use only in areas designated as non-attainment areas or maintenance areas for national ambient air quality standards (NAAQS) pollutants (ozone, carbon monoxide, and particulate matter). Under these criteria, relatively few areas in Montana were designated as non-attainment areas and eligible to receive CMAQ funds. Currently, there are only 12 communities in Montana designated as non-attainment areas for vehicle-related pollutants (carbon monoxide or particulates).

Federal funding requirements have become somewhat more flexible in recent years under SAFETEA-LU. Each state is guaranteed a minimum apportionment of the total CMAQ program funding, regardless of whether the State has any non-attainment or maintenance areas. Program funds can now be used anywhere in the state for any type of federal-aid highway project.

MDT has chosen to take advantage of this increased flexibility to proactively address air quality and automobile congestion problems throughout the state. To do this, the MDT has created the Montana Air & Congestion Initiative (MACI) Discretionary and Guaranteed programs.

Montana Air & Congestion Initiative (MACI) – Discretionary Program. The MACI – Discretionary Program provides funding for projects in areas of the state that are designated non-attainment or recognized as being "high-risk" for becoming non-attainment. Eligible activities include intersection improvements, signal

synchronization projects, and the purchase of sweepers and flush trucks. District Administrators and local governments nominate projects cooperatively. Projects are prioritized and selected based on air quality benefits and other factors. Sidewalk projects may be funded under the MACI program.

OTHER STATE FUNDING RESOURCES

Recreational Trails Program Funds. SAFETEA-LU also provides funding for the Recreational Trails Program (RTP) administered by the Montana Fish, Wildlife & Parks (FWP). RTP funds (in the form of grants) can be used for non-motorized or motorized, multiple-use, community, rural and backcountry trails.

Several SRTS activities may be eligible projects under the RTP including:

- Operation of trails-related environmental protection and safety education programs.
- Development of urban trail linkages near homes and work places.
- Providing features to assist disabled individuals.
- Signs and other traffic control devices in conformity with the MUTCD.

RTP grant applicants can include federal, state, county or municipal agencies, private associations and clubs. The FWP relies on a citizen-based State Trails Advisory Committee for advice on trail program funding decisions and related issues. RTP grants may not exceed 80% of the total of an individual project and funding is provided as a reimbursement for project expenditures incurred. Applicants should be aware of program requirements and contact and discuss potential projects with FWP staff before applying for RTP funds.

More information about the Montana's Recreational Trails Program can be found online at: http://fwp.mt.gov/parks/grants/rtp/default.html or by contacting Steve Gilbert (406) (444-7642).

Land & Water Conservation Fund Program – LWCF. The *Land and Water Conservation Fund Act of 1965* established a federal grants program encouraging a full partnership between national, state, and local governments in planning and funding outdoor recreation projects. The LWCF Program in Montana is administered by FWP.

The LWCF Program provides grants for the acquisition and development of public outdoor recreation areas and outdoor facilities. Eligible applicants include incorporated cities or towns, counties, school districts, state agencies, and tribal governments. LWCF funds are awarded through a competitive grant application process in order to distribute funding equitably.

The kinds of projects that have been approved and funded by LWCF in the past include such facilities as ball fields, open space acquisitions, golf courses, public parks, swimming pools, skating rinks, picnic facilities, playground equipment, snowmobile facilities and walking trails. As with RTP funding, applicants should be aware of program requirements and discuss potential projects with FWP staff before applying for LWCF Program funds.

More information about the LWCF Program can be found online at: http://fwp.mt.gov/parks/grants/lwcf/default.html or by contacting the Helena Headquarters of Montana State Parks at (406) 444-3750.

PRIVATE FUNDING

Private funding can be useful for the implementation of SRTS programs. Private funding for SRTS programs may come in the form of dedications, exactions, monetary contributions, corporate underwriting, donations of right-of-way, and construction of new facilities to required city or county standards. Several forms of private financing for transportation improvements that could benefit SRTS are described in this section.

Developer Impact Fees. Private development can make valuable contributions to bicycle and pedestrian systems. Accessible bicycle and walking paths are highly valued amenities for new homebuyers. Developers who either pay for or construct pathways, or who contribute development impact fees for the construction of such facilities are making wise investments that will directly benefit their developments and their clients.

New developments, both residential and commercial, place a strain on existing public facilities, such as parks and streets. Development impact fees are paid by developers to help cover the additional costs resulting from new construction, and these funds may be used for the provision of paved shoulders, bicycle lanes, and sidewalks built as part of the required roadway cross-section. In some circumstances, shared use paths have been constructed by jurisdictions using impact fees if they serve transportation needs generated by the new development.

Donations from Local Businesses. Local industries and private businesses may agree to provide support for SRTS programs through donations of cash to help fund specific improvements; donations of services to reduce the cost of program implementation including equipment and labor to construct improvements, prizes for encouragement activities, or other services.

Funding from Private Corporations and Foundations. SRTS funding may also be available from private foundations, corporations, and conservation-minded benefactors. For example, the Robert Wood Johnson Foundation provides funds to non-profit organizations and public agencies for projects that improve health and health care in the U.S. SRTS projects would generally be compatible with one of the Foundations primary goals of promoting "healthy communities and lifestyles."

Additionally, the Bikes Belong Coalition also offers a grant program for non-profit organizations and agencies within the United States that are committed to increasing bicycling. The Coalition offers grants for bicycle education, new facility construction, and advocacy.

Other potential funding sources can be researched on the internet at the website for "The Foundation Center" (http://lnps.fdncenter.org).

Individual Contributions/Events. Statistically, individuals give more money than corporations and foundations combined. Therefore, a local fund drive may be a good way to generate funding for SRTS activities. Special events like walkathons or a bikeathons or more traditional fundraising activities like bake sales, concerts, etc. can also help generate SRTS funds.

Parent Teacher Associations (PTAs) and School Districts. Many PTAs have funds to distribute to school programs and often schools have safety funding. These potential funding sources should be investigated as part of the SRTS effort.

CHAPTER 9: IMPLEMENTING SRTS

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Implementing SRTS is about translating the ideas and recommendations you developed for your plan into real actions and projects. Critical to implementing your plan is developing a strategy to make ongoing and continuous progress toward meeting your identified goals and objectives.

To accomplish this, your SRTS Team will need to discuss and identify:

- What projects or activities will be your priorities;
- Who will be partners for your projects;
- Who will be responsible for completing projects and activities;
- Potential funding sources for activities and projects;
- A desired timeline for completing SRTS activities and projects; and
- Ways to sustain your SRTS efforts.

The process for implementing SRTS will vary depending on the number and type of actions in your plan and the availability of resources to get activities or projects underway. For example, holding a bicycle rodeo at a single school requires considerably less effort and resources to implement than a project intended to develop a new shared use path in a school neighborhood. In most instances, focusing on simple and easily accomplished tasks may be the best way to begin your implementation efforts. Making small, immediate changes and publicizing positive outcomes to inform the community of the results of your effort and help create the momentum and support needed to implement more costly and substantive changes.

A good way to begin making positive changes in your community is to conduct a kick-off event or special activity at school. Use the event or activity as an opportunity to showcase your planning efforts and SRTS goals. Invite the media, local decision-makers, parents, school staff, the SRTS Team and, of course, children. Consider holding the event in conjunction with another well recognized event like *International Walk to School Day* or *Earth Day*.

SETTING PRIORITIES

Determining priorities helps direct resources and efforts to the activities and projects that matter most to SRTS stakeholders and that will have the greatest impact on children walking and bicycling to school. Think about why you became interested in SRTS, revisit your goals and objectives to see what you hoped to accomplish, and assess the ability of your recommended activities and projects to make a difference for children walking and bicycling to school.

Start by reviewing your list of recommended SRTS actions and decide which activities or projects should be implemented first. Recognize that some things may be easily fixed, such as changing or adding signs or installing new bicycle racks. Other factors that may help you determine how readily projects can be implemented include:

- whether or not additional right-of-way or easements are needed;
- whether opportunities to "piggyback" improvements on other projects exist;
- public opinion; and
- the overall cost and availability of funding sources.

Some projects, like constructing a new sidewalk, will require more time to gather support and funding and to actually get accomplished. Such projects take longer because they require planning, design and construction and may require cooperation among different governmental agencies. However, it is important for your SRTS Team to start building support and pursuing necessary funding for the "long-term" projects as soon as possible.

In some cases, it may be appropriate to implement temporary solutions to identified problems. This may be an obvious choice in instances where it is known that a road or street may be rebuilt soon, but pedestrian or bicyclist safety needs must be immediately addressed. Temporary installations present opportunities to test more permanent solutions or to gauge public acceptance of an improvement strategy. However, in most cases, implementing a permanent solution should be sought.

FINDING PARTNERS FOR SRTS PROJECTS

Implementation of SRTS programs typically occurs on several levels. Your SRTS Team will need to take the lead in organizing a variety of partners to get the work done. You may ultimately work with the MDT or other state agencies, your School District, your local county or municipal governments and law enforcement agencies, community groups or neighborhood associations, with your local business community, or with other organizations throughout Montana that support safety-based programs. One of the strengths of SRTS programs is that there are many potential partners for projects and activities.

Implementing your plan will be a collective effort and requires that you build on the partnerships established with various SRTS stakeholders and combine efforts for maximum efficiency and effectiveness. Contact parents, school officials, local government officials, law enforcement personnel and other stakeholders to inform them of your proposed improvements and short-term and long-term priorities and how they can help your SRTS efforts.

ESTABLISHING IMPLEMENTATION RESPONSIBILITIES

Your SRTS Team is an advocate for activities and projects and may be able to help secure the resources needed for SRTS actions. However, actually implement-

ing the activities or projects will likely be the responsibility of others like individual teachers at school, the school board, a parent group, or local government, or even state government. Different entities may also be responsible for various components of the same project. For example, developing a new pathway or trail could affect a road under MDT's jurisdiction, cross local streets, and require construction on school property.

For these reasons, it is essential to clearly establish the roles and the responsibilities for implementation among those involved in your SRTS activities and projects. Cooperative agreements may be needed in some cases to identify project roles and responsibilities, describe how involved parties will work together to complete the activity or project, and specify funding contributions.

FINDING FUNDING SOURCES

Finding funds for SRTS activities and projects will be an ongoing effort that requires cooperation of various stakeholders and government agencies. As discussed in Chapter 8, funding SRTS involves matching identified needs with grant programs, securing safety funds from schools or local governments, seeking contributions of funds or services from organizations or private donors, or even holding your own fundraising events. There is no easy and quick way to find funding sources for SRTS. It takes considerable time and effort to find funding sources so it's important not to get discouraged if you come up short.

Because SRTS includes actions ranging from education efforts and encouragement activities to enforcement operations and engineering improvements, the potential funding sources for these program areas are fairly diverse. One of the key reasons often cited for the success of SRTS programs is being creative and flexible in securing funding and interacting with local agencies. SRTS funding opportunities are constantly changing so it pays to keep searching for potential funding sources.

SETTING A TIMEFRAME FOR YOUR ACTIONS

The timeframe required to accomplish your SRTS activities and projects will vary and depend on your priorities and your ability to find partners and the necessary funding. Generally, the improvements requiring the least amount of time and resources will be completed first, and those that require the most will be completed later as resources allow.

The time required to complete some SRTS projects may depend on the scheduled implementation dates for other planned projects. During your initial data collection phase, you identified who maintains jurisdiction over the roads and streets near your school and if improvements to these facilities are scheduled in the near future. As you begin the implementation process, you will want to go back to those with jurisdiction to request their help in getting your projects built—either by themselves or along with already planned improvement projects. Your timeframe for implementation will depend on the response to your request.

When you can implement projects may also depend on government funding cycles and the time required to apply for and receive funds through assistance or grant programs. It pays to keep current on application periods and deadlines for annual funding applications.

Project development and implementation activities often take time. Remember that infrastructure projects using Federal-aid must conform to all federal and state laws and regulations pertaining to environmental compliance, design, contract letting, and construction administration. The time required to adequately meet these requirements needs to be considered when establishing schedules for completing projects.

SUSTAINING SRTS

Implementing projects and activities to meet all of your SRTS goals may take many years to complete. Therefore, it is critical to sustain energy and interest in the program over the long term, particularly as members of your SRTS Team, school administrators, and local decision makers change. The most effect way to accomplish this is to build a broad base of support within the community and focus on small successes. Some other ideas to keep your program going include:

Identify additional program champions. A Principal and/or teacher at the school who champions the program—he or she will be able to sustain the program over a long period.

Publicize your activities and successes. Get visibility for activities through local media and school communications and publicize your activities. Making the work fun and positive helps ensure people will want to continue working on SRTS and may encourage others to become involved. Ask to frequently make reports at local school board or parent group meetings.

Encourage policy changes. You may be able to realize long-lasting positive effects by working together with your school, school district or local government to establish policies that support children walking and bicycling to school. For example, local planning departments can adopt policies that ensure that non-motorized uses like walking and bicycling are accommodated in new developments, particularly residential areas near schools. School districts could also adopt a curriculum that ensures pedestrian and bicycle safety education will be provided to children.

Consider creating a permanent SRTS committee. A permanent committee within your local PTA, school board, or pedestrian safety group means that SRTS will continue to receive attention and energy.

FINAL THOUGHTS ON IMPLEMENTATION

Keep children involved. Children can be effective campaigners and initiators as evidenced by their successful involvement with past anti-smoking and recycling campaigns.

Involve Parents. Without parental support, nothing really changes. Speaking and meeting with other parent groups will provide you with ideas you might like to try in your community; it can also give your project team some necessary inspiration and support.

Empower your SRTS Team. Make sure you have the right players on the team who can help with access to information or the media, who know about funding sources, and who understand the process required to develop and implement physical improvements.

Finding and keeping volunteers. Finding volunteers is easier if the program is arranged so that volunteers are required immediately before and after school. Offer child care as a way to encourage volunteers. Organize your efforts so volunteer commitments require only short, manageable obligations. Spend time with volunteers and provide some SRTS training. Training increases the commitment a volunteer feels towards the project, reduces turnover, and strengthens your program.

Recognize when outside help is needed. Some projects may require specialized help (like traffic engineers) to analyze situations and develop appropriate solutions. This could require entering into professional service contracts to get the work done. School Boards or local government have the staff and expertise necessary to draft and execute such contracts.

Be persistent! Some of your ideas or recommendations may take some time and education to generate the necessary support.

USING MONTANA'S SRTS FUNDS FOR PROJECTS

Montana's SRTS Program is a 100 percent federally funded cost-reimbursement program managed through MDT's Rail, Transit & Planning Division. Projects are funded through a statewide competitive process with funds limited to those authorized in the SRTS program. Cost-reimbursement means that sponsors will front the cost of the project and will be reimbursed throughout various stages of the project.

The SRTS Program offers an excellent opportunity to help you undertake and complete activities and projects that will increase safety and result in more children walking and bicycling to school. However, SRTS funds are subject to federal regulations and guidelines, and applicants need to keep in mind that following federal regulations may require a significant time and resource commitment. Before submitting an application to the SRTS Program, applicants are encouraged to consider the following:

- Do we have the necessary staff to administer the funding?
- Do we have the funding to front the project costs until it is reimbursed?
- Do we have the funding to support costs that cannot be reimbursed?
- Do we have the resources to support the continuation of the program or project?

Recognize that SRTS efforts should already be underway at your school or in your community. MDT's funding application requires that you provide the information typically found in SRTS plans and discussed earlier in this Guidebook. If you are just getting started, Montana's SRTS program can help you develop a plan for your school or community.

To be successful in applying for funding through Montana's SRTS Program, you should have an understanding of the process and application requirements before you begin work. Well-coordinated efforts will save time and resources. Key information about the program and some ideas for preparing successful funding applications are provided on the following pages.

APPLICATIONS AND PROJECT SELECTION

Montana's SRTS Program provides funds for projects through a statewide competitive process. Applications are annually solicited throughout Montana by publicizing the SRTS program through news releases to media and posted on MDT's website, presentations at large and small public events, and by networking with interested organizations and agencies. statewide, the projects are prioritized from highest to lowest and the projects are funded in this order until the yearly funds are exhausted.

Applications must be completed using **Montana's Safe Routes to School Application** form. Copies of the application form and program guidance are available through MDT's Rail, Transit & Planning Division. The current version of the application form and other helpful information and links can be found on MDT's website at: http://www.mdt.mt.gov/pubinvolve/saferoutes/.

Applicants may submit more than one project application, but each project requires a separate application. Applications must follow the submission requirements as described and must be completed and returned to the appropriate MDT office by the deadline. Applications deemed incomplete by MDT will not be eligible for funding.

The project selection process will be focused on an applicant's ability to meet SRTS Program goals and the potential to develop long term bicycling and walking behaviors. All applications received will be evaluated by MDT and ranked against all the applications received. MDT's evaluation team includes individuals with experience and expertise in engineering, changing behaviors and attitudes, and bicycle and pedestrian safety.

MDT will attempt to fund as many qualified applicants as possible with the available resources. All applicants will be notified of the evaluation results in writing.

ELIGIBLE APPLICANTS FOR SRTS FUNDS

Any state, local or regional agency, school/school district (including private schools), and any nonprofit organization in Montana that can demonstrate an ability to meet the requirements of the SRTS program are eligible to apply for SRTS funds. It may be beneficial for schools/school districts and nonprofit organizations to partner with a local agency experienced in complying with federal requirements. For infrastructure projects, local CTEP contacts can be found on MDT's website at: http://www.mdt.mt.gov/business/ctep/.

INAPPROPRIATE USES OF SRTS FUNDS

Funding for the SRTS Program is flexible to encourage innovative solutions; however, applicants are advised that certain projects are ineligible. Ineligible projects and activities include the following:

- Projects that do not specifically serve the stated purposes of the federal SRTS Program which are: to enable and encourage children, including those with disabilities, to walk and bicycle to school; to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution within 2 miles of a primary or middle school serving Grades K-8.

- Recurring costs such as crossing guard salaries unless there are plans in place for alternative sources of funding to perpetuate the program in the future.

- Projects that reorganize pick-up and drop-off primarily for the convenience of drivers rather than to improve the safety of walking and bicycling for students.

- Education programs that are primarily focused on bus safety and improvements to bus stops.
- Long-term facility maintenance or ongoing routine maintenance activities such as snow removal, mowing and fertilizing, or weed control.

SRTS PROJECT CATEGORIES

The Montana SRTS Program is intended to provide resources for both noninfrastructure (behavioral) and infrastructure (construction) projects to increase the number of kids walking and bicycling to school. Separate funding application forms have been developed for each project category.

Noninfrastructure Projects

Noninfrastructure projects are activities intended to change community behaviors and attitudes and make it safer for children in grades K-8 to walk and bicycle to school. Evaluation, Education, Encouragement, and Enforcement activities are all vital components of successful SRTS plans and are generally categorized as noninfrastructure projects under Montana's SRTS Program. Chapter 6 in this Guidebook discusses numerous examples of noninfrastructure activities often associated with SRTS programs.

Eligible Activities. Eligible noninfrastructure-related activities identified in MDT's SRTS program application generally include: public awareness campaigns and outreach to the press and community leaders; traffic education and enforcement in the vicinity of schools; student education sessions on bicycle and pedestrian safety, and the health and environmental benefits of walking and bicycling; and SRTS training and program development.

Noninfrastructure activities eligible for Montana SRTS reimbursements are described below:

<u>Evaluation Activities</u>

- Conducting SRTS assessments for individual schools or school districts
- Conducting community-wide SRTS assessments
- Contracted professional services needed for SRTS assessments
- Costs for the gathering, analysis, and evaluation of applicable data including Walking and Bicycling Audits of school neighborhoods and school site audits
- Developing SRTS Plans

<u>Education Activities</u>

- Pedestrian and bicycle safety education training for children
- Education efforts for children regarding personal safety, health, and transportation and environmental choices
- Relevant training for teachers and school administrators (including paying trainers)
- Traffic safety education for parents and children (including paying trainers)
- Training for crossing guards
- Printing costs, materials/supplies needed for education efforts

- Developing maps of suggested Safe Routes to School

Encouragement Activities

- Driver safety campaigns near schools
- Creating Walking School Buses or Bicycle Trains for school children
- Starting school encouragement programs
- Support for special events
- Providing modest prizes or incentives for special events and ongoing activities that encourage more walking and bicycling
- Printing and other costs associated with promotion of events and activities

Enforcement Activities

- Establishing crossing guard programs and purchasing equipment for crossing guards
- Paying for increased traffic enforcement in the vicinity of schools
- Purchasing portable speed trailers

MDT has established $1,500 as the minimum project amount for noninfrastructure activities and requires SRTS Funds be spent within two years of award. All applicants are encouraged to explore other ways to accomplish the activities that will not be funded through Montana's limited SRTS noninfrastructure funds. more traditional fundraising activities like bake sales, concerts, etc. can also help generate SRTS funds.

Infrastructure Projects

Infrastructure projects are improvements that involve the planning, design, and construction of facilities that will substantially improve the ability of children in grades K-8 (including children with disabilities) to walk and bicycle to school. Infrastructure projects usually take longer to plan and implement, and cost substantially more than most noninfrastructure activities. Keep in mind that applicants are encouraged to combine SRTS funding with other funding sources (like CTEP funds) to maximize effectiveness.

Eligible Projects. MDT's SRTS program application indicates that funding can be used for new or improved pedestrian and bicycle routes, crosswalks, pathways, walkways, or trails on publicly owned property or easements within 2 miles of K-8 schools. Projects can be located on or off Montana's designated state highway system (including designated Urban routes), or on private lands that have a public easement if there is a written legal easement or other written legally binding agreement that ensures public access to the project. **Infrastructure projects that propose construction on the designated state highway system must be coordinated with and have MDT's endorsement.**

The following examples of infrastructure projects that may be eligible for Montana SRTS reimbursements and are provided to encourage ideas for your program:

Pedestrian Facilities

- Installing curb ramps and other ADA accessibility improvements at existing crosswalks*

- Construction of new separated pathways*
- Improvements to existing separated pathways*
- Construction of new, or replacement of deficient sidewalks*
- Projects to increase connectivity by closing sidewalk or pathway gaps*
- Purchasing benches for pedestrian use or other pedestrian-related amenities**

Bicycle Facilities

- Construction of new separated shared-use bicycle paths*
- Improving existing separated shared-use bicycle paths*
- Purchasing bicycle parking racks*
- Purchasing benches for bicyclist use or other bicyclist-related amenities**

Traffic Control Devices/Enforcement Equipment

- Signs and pavement markings for new crosswalks*

Traffic Calming Measures

- Constructing curb bulb-outs associated with crosswalks**
- Constructing median refuges at crosswalks**

Costs incurred after project award for planning, design, and engineering expenses, including consultant services, associated with developing an approved infrastructure project are also eligible for reimbursement under the SRTS Program.

MDT has established the minimum project amount for infrastructure activities at $10,000. As with funding for noninfrastructure activities, SRTS Funds for infrastructure projects must typically be spent within two years of award.

If your project is not eligible for SRTS infrastructure funds, you still have an opportunity to apply for CTEP funding. Applicants requesting only CTEP funding for projects must submit applications through the local government CTEP Coordinator. **Remember, CTEP projects require local matching funds.**

If you have questions about whether your infrastructure project is eligible for SRTS or CTEP, contact MDT's SRTS Coordinator at 1-877-935-7233 or the CTEP Program at (406) 444-4221.

* Project also eligible for CTEP funding
** Eligible for CTEP funding only

TITLE 23 COMPLIANCE

All noninfrastructure activities and infrastructure projects funded by SRTS monies (or with CTEP funds) must comply with Title 23 requirements of the U.S. Code. These requirements include, but are not limited to, Davis Bacon prevailing wage rates, competitive bidding, and other contracting requirements.

Title 23 requirements of the U.S. Code are available at:
http://www.fhwa.dot.gov/legsregs/legislat.html.

As part of the Title 23 requirements, all infrastructure projects funded by SRTS monies (or CTEP) must also comply with National Environmental Policy Act (NEPA)

regulations. Most SRTS infrastructure projects will likely qualify for a categorical exclusion under the provisions of 23 CFR 771.117. Categorical exclusions are "a category of actions which do not individually or cumulatively have a significant effect on the human environment...and for which, therefore, neither an environmental assessment nor an environmental impact statement is required."

For more guidance on Categorical Exclusions, please visit the FHWA website at: http://www.environment.fhwa.dot.gov/projdev/docuce.asp.

Environmental compliance is the responsibility of the applicant and will be determined during project development. Please contact MDT's SRTS Coordinator if you have questions about this process.

OTHER CONSIDERATIONS FOR SRTS APPLICANTS

MDT's funding application forms are designed to help us learn as much about your proposed activity and current situation as possible. Your application provides the only information we will be able to consider when making judgments among many worthwhile projects. Funding for SRTS projects is competitive—so the information you provide is very important in helping us select the best projects.

The best way to prepare for seeking SRTS Program funds is by completing activities and gathering SRTS information needed for the application. The items below are suggestions if you intend to apply for SRTS funds.

- Communicate with and gather letters of support from parents, school principals and staff, School District representatives, city and county officials, the law enforcement community, and area health officials.
- Identify community partners and individuals who can serve as project sponsors and project contacts.
- Gather accurate information about how students get to and from school (walking, bicycling, cars, buses, etc.).
- Identify the factors that may be inhibiting children from walking or bicycling to school and determine gaps in pedestrian and bicycle safety education.
- Inventory and prioritize where improvements are needed. Photograph areas of concern so you can include them with your application.
- Document how your activities and projects will improve the safety of students, encourage an increase in walking and bicycling, or benefit the school neighborhood and community.
- Develop detailed descriptions of your proposed activity or project. Presenting detailed information about your activity or project conveys an understanding of SRTS issues and problems; shows that you identified a reasonable solution; and demonstrates you recognize the level of effort and resources required to implement the activity or project.

- Provide accurate budget information and show other potential funding sources. School administrators should be able to help you estimate costs for encouragement and education activities. Public Works Directors, County Road departments or engineers can help you estimate costs for infrastructure projects.

Recognize that considerable effort, including some level of SRTS assessment, must occur before submitting an application for SRTS funding. This Guidebook outlines a process for conducting SRTS assessments and provides forms that can be used to generate much of the assessment information required of applicant seeking SRTS funds.

If you cannot provide the required information, consider applying for funds to conduct a SRTS assessment for your school(s) or community.

APPENDICES

APPENDIX A: MONTANA SRTS RESOURCES AND INFORMATION LINKS

STATE OF MONTANA AGENCY CONTACTS

Safe Routes to School Coordinator
c/o Rail, Transit & Planning Division
Montana Department of Transportation
P.O. Box 201001
Helena, MT 59620-1001
1-877-935-SAFE (7233)
http://www.mdt.mt.gov/pubinvolve/saferoutes/

Community Transportation Enhancement Program (CTEP)
Montana Department of Transportation
P.O. Box 201001
Helena, MT 59620-1001
(406) 444-4221
http://www.mdt.mt.gov/business/ctep/

PHYSICAL ACTIVITY/OBESITY/HEALTH CONCERNS

Physical Activity Recommendations from the Centers for Disease Control and Prevention Available at: http://www.cdc.gov/nccdphp/dnpa/physical/recommendations/index.htm

2006-2010 Montana Nutrition and Physical Activity State Plan to Prevent Obesity and Other Chronic Diseases, Montana Nutrition and Physical Activity Program in partnership with the Montana Department of Public Health and Human Services. Available at: http://www.montana.edu/mtnapa/stateplan01.11.06.html

"Obesity Epidemic and Montana Kids"
Available at: http://www.opi.mt.gov/pdf/YRBS/MontanaObesity2004.pdf

"Overweight and Obesity: Health Consequences" by U.S. Department of Health and Human Services. Available at: http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_consequences.htm

American Obesity Association, "Obesity in Youth"
Available at: http://www.obesity.org/subs/fastfacts/obesity_youth.shtml

YOUTH RISK BEHAVIOR SURVEILLANCE (YRBS) SYSTEM DATA FOR MONTANA

National YRBS Statistics from the Centers for Disease Control and Prevention
Available at: http://www.cdc.gov/HealthyYouth/yrbs/

Montana StatewideYRBS Physical Activity Statistics (1991–2005)
Available at: http://apps.nccd.cdc.gov/yrbss/SelQuestyear.asp?cat=6&desc=Physical%20Activity&loc=MT

Montana Office of Public Instruction (OPI) – 2005 Statewide and Regional YRBS Statistics for Montana. Available at: http://www.opi.state.mt.us/YRBS/Index.html

The Montana Youth Risk Behavior Survey Report-2005 for Grades 7-8
Available: http://www.opi.mt.gov/PDF/YRBS/7-8Report.pdf

Note: School-Specific YRBS Data is available through OPI's website. Access is gained through passwords provided to principals and superintendents in each school district.

CRASH DATA FOR MONTANA'S HIGHWAY SYSTEM AND INFORMATION ABOUT TRAFFIC SAFETY PROGRAMS

State Highway Traffic Safety Office
Montana Department of Transportation
P.O. Box 201001
Helena, MT 59620-1001
(406) 444-3298
http://www.mdt.mt.gov/safety/safetyprg.shtml

SCHOOL SPECIFIC INFORMATION FROM OPI

Montana School Information. The OPI's website contains a "Find-A-School" feature that will provide school information for Montana cities and towns and can provide other information needed for MDT's SRTS application form including: grades served, School District where the school is located, enrollment data, and contact information for the Principal of each school and the Superintendent of the associated School District. Note that current school enrollment information may be best obtained by contacting the school principal or district staff.

School information can be found on OPI's website at http://www.opi.state.mt.us/.

Title I Status. MDT's application form asks applicants to identify if the school where the SRTS project is located is a Title I School. This classification refers to Title I, Part A of the Elementary and Secondary Education Act of 1965 (ESEA)

which provides local educational agencies with extra resources to help improve instruction in high-poverty schools and ensure that poor and minority children have the same opportunity as other children to meet State academic standards.

Information about the Title I status of your school can be found by going to:
http://data.opi.state.mt.us/IRISReports/main.asp?PageId=filter.asp&RptID=91&RptName=Title|I|Schools&PrcName=procROTitleISchools&RptCategory=School_Directory

MONTANA MAPPING RESOURCES FOR SRTS

Google Map: This website can provides street maps, satellite imagery, or hybrid of maps and satellite images showing street/road names for all areas of Montana. This mapping resource can be accessed at: http://maps.google.com

USGS Quad Maps:
http://nris.mt.gov/interactive.html - interactive website with USGS maps for search areas

Aerial photos for all rural and urban areas of Montana:
http://nris.state.mt.us/nsdi/orthophotos/ - Natural Resource Information Service website with access to various sources for aerial photography
http://nris.mt.gov/interactive.html - interactive website with and recent aerial photography available for search areas

MDT Maps (available from MDT website):
http://www.mdt.mt.gov/travinfo/scripts/citymaps.pl -- City Maps
http://www.mdt.mt.gov/travinfo/scripts/urbanmaps.pl -- Urban Area Maps
http://www.mdt.mt.gov/travinfo/scripts/countymaps.pl -- County Maps
ftp://ftp.mdt.mt.gov/aerial_photos/ - Aerial photos for Select Urban Areas

PLANNED MDT PROJECTS AND TRANSPORTATION PLANS

MDT's *Statewide Transportation Improvement Program* (STIP) can be accessed at:
http://www.mdt.mt.gov/pubinvolve/stip.shtml

Links to Transportation Plans for Urban areas in Montana can be accessed by searching the list of Brochures, Reports and Studies on MDT's website at:
http://www.mdt.mt.gov/publications/brochures.shtml

CTEP PROJECT MANUAL

MDT's *CTEP Guidelines*, a manual with guidance for administering CTEP projects can be accessed at:
http://www.mdt.mt.gov/publications/docs/manuals/ctep_manual.pdf

SRTS GUIDANCE AND MODEL PROGRAMS

The following web sites offer a wealth of information on SRTS programs, including sample press releases, data, how-to guides, community presentations and ideas to help develop messages. These websites can also provide links to other numerous resources relating to Evaluation, Education, Encouragement, Enforcement and Engineering activities, tools and strategies.

FHWA's Office of Safety – SRTS
http://safety.fhwa.dot.gov/saferoutes

NHTSA Safe Routes to School Tool Kit
www.nhtsa.dot.gov/people/injury/pedbimot/bike/Safe-Routes-2002/toc.html

National Center for Bicycling & Walking
www.bikewalk.org/safe_routes_to_school/SR2S_introduction.htm

Pedestrian & Bicycle Information Center
www.saferoutesinfo.org

Active Living Resource Center
www.activelivingresources.org

CDC, Kids Walk to School (with a downloadable community presentation and quick start resource for walk to school programs)
www.cdc.gov/nccdphp/dnpa/kidswalk/index.htm

Marin County (CA) Safe Routes to School
www.saferoutestoschool.org

Go For Green (Canada)
www.goforgreen.ca/walktoschool.com

APPENDIX B:
SAMPLE SRTS LETTERS, FORMS, SURVEYS, AND CHECKLISTS

EXAMPLE SRTS TEAM INVITATION

(On School Letterhead)

DATE

TO

Re: Northwest Elementary School's Safe Routes to School Program
Program Team Formation

Dear _____:

You are invited to join a small Team in an exciting new Program here at Northwest Elementary – the Safe Routes to School Program. The purpose of the Safe Routes to School (or SRTS) Team is to ensure that safer walking and cycling routes to school are provided for our children, as well as to provide safety and educational training to them about walking and cycling. Through this Program, it is our desire to, 1) have sidewalks and bike lanes built to improve our children's safety, and 2) expand the school's curriculum to include safety and education programs that will teach our children proper pedestrian and bicycling behavior and safety techniques.

We have scheduled a SRTS Team kick-off meeting on (DATE), at (TIME). The meeting will be held at (PLACE). Refreshments and childcare will be available, and we look forward to seeing you there!

Please RSVP to me at (PHONE #), so I can plan accordingly. Thank you in advance for your help with this important program.

Sincerely,
NAME & ADDRESS

cc: Principal
School Board

SRTS SCHOOL TRAVEL SURVEY FORM

Safe Routes to School
Student Arrival and Departure Tally Sheet

School Name: _____ Grade: _____ # of students enrolled in class _____

Teacher: _____ Monday's Date: _____

School's Zip Code _____ (used to identify weather conditions)

Teachers, here are simple instructions for using this form:

- Please conduct these counts **each of the five days of the assigned week.**
- Before asking your students to raise their hands to indicate the *one answer* that is correct for them, read through all potential answers so they will know what the choices are.
- Ask your students as a group the question "**How did you arrive at school today?**"
- Read each answer and record the number of students that raised their hands for each.
- Follow the same procedure for the question "**How do you plan to leave for home after school?**"
- Please conduct this count regardless of weather conditions (i.e., ask these questions on rainy days, too).

Step 1. Fill in the weather conditions and number of students in class each day			**Step 2**. Ask students "**How did you arrive at school today?**" and "**How do you plan to leave for home after school?**" (*record number of hands for each answer*)							
	Weather S= sunny R= rainy C= cloudy Sn= snow	**Number of Students** (in class when count made)	**Walk**	**Bike**	**School Bus**	**Family Vehicle** (only with children from your family)	Carpool (riding with children from other families)	**Transit** (city bus, subway, etc.)	Other (skate-board, scooter, inline skates, etc.)	
Mon AM										
Mon PM										
Tues AM										
Tues PM										
Wed AM										
Wed PM										
Thur AM										
Thur PM										
Fri AM										
Fri PM										

Comments *(Please list any disruptions to these counts or any unusual travel conditions to/from the school on the days of the tally)*:

_____

_____

Thank you for helping gather this information!

SRTS PARENT SURVEY FORM

Survey about Walking and Biking to School
- For Parents -

Dear Parent or Caregiver,

Your child's school wants to learn your thoughts about children walking and biking to school. This survey will take about 10 - 15 minutes to complete. We ask that each family complete only one survey per school your children attend. If more than one child from a school brings a survey home, please fill out the survey for the child with the next birthday from today's date.

After you have completed this survey, send it back to the school with your child or give it to the teacher. Your responses will be kept confidential and neither your name nor your child's name will be associated with any results. **Thank you for participating in this survey!**

These first few questions gather some general and background information.
Remember, all information will be confidential, and no identifying information will be released.

1. **What is the grade of the child who brought home this survey? (K – 8)** _____ grade

2. **Is the child who brought home this survey male or female?** ☐ MALE ☐ FEMALE

3. **How many children do you have in Kindergarten through 8th grade?** _____ children

4. **What is your ZIP Code?** *(please provide ZIP +4 if known)* _____ ZIP code
   (note: many utility bills will show your ZIP +4)

5. **How far does your child live from school?** *(choose one)*

   ☐ a. less than 1/4 mile
   ☐ b. 1/4 mile up to 1/2 mile
   ☐ c. 1/2 mile up to 1 mile
   ☐ d. 1 mile up to 2 miles
   ☐ e. More than 2 miles
   ☐ f. Don't know

6. **On most days, how does your child arrive at school and leave for home after school?** *(circle one choice per column)*

Arrive at school	Leave for home
a. Walk	a. Walk
b. Bike	b. Bike
c. School Bus	c. School Bus
d. Family vehicle (only with children from your family)	d. Family vehicle (only with children from your family)
e. Carpool (riding with children from other families)	e. Carpool (riding with children from other families)
f. Transit (city bus, subway, etc.)	f. Transit (city bus, subway, etc.)
g. Other (skateboard, scooter, inline skates, etc.)	g. Other (skateboard, scooter, inline skates, etc.)

7. **How long does it normally take your child to get to/from school?** *(check one choice per column)*

Travel time to school	Travel time from school
☐ a. Less than 5 minutes	☐ a. Less than 5 minutes
☐ b. 5 - 10 minutes	☐ b. 5 - 10 minutes
☐ c. 11 - 20 minutes	☐ c. 11 - 20 minutes
☐ d. More than 20 minutes	☐ d. More than 20 minutes
☐ e. Don't know / Not sure	☐ e. Don't know / Not sure

8. **Has your child asked you for permission to walk or bike to/from school in the last year?** *(check one box)* ☐ YES ☐ NO

9. **At what grade would you allow your child to walk or bike without an adult to/from school?** *(select a grade between K-8)*

Grade (K-8) _____ (or ☐ I would not feel comfortable at any grade)

10. Which of the following issues affected your decision to allow, *or not allow*, your child to walk or bike to/from school? *(check all that apply)*	11. Would you probably let your child walk or bike to/from school if this problem were changed or improved? *(circle one per line)* (☐ My child already walks or bikes to/from school)		
☐ Distance	YES	NO	Not Sure
☐ Convenience of driving	YES	NO	Not Sure
☐ Time	YES	NO	Not Sure
☐ Child's participation in before/after-school activities	YES	NO	Not Sure
☐ Speed of traffic along route	YES	NO	Not Sure
☐ Amount of traffic along route	YES	NO	Not Sure
☐ Adults to walk or bike with	YES	NO	Not Sure
☐ Sidewalks or pathways	YES	NO	Not Sure
☐ Safety of intersections and crossings	YES	NO	Not Sure
☐ Crossing guards	YES	NO	Not Sure
☐ Violence or crime	YES	NO	Not Sure
☐ Weather or climate	YES	NO	Not Sure
☐ Other _____	YES	NO	Not Sure
☐ Other _____	YES	NO	Not Sure

12. **In your opinion, how much does your child's school encourage or discourage walking and biking to/from school?** *(check one box)*

Strongly Encourage	Encourage	Neither	Discourage	Strongly Discourage
☐	☐	☐	☐	☐

(Questions 13 and 14) Please answer these two questions based on your feelings (or what your child has told you) about your child walking or biking to/from school *whether or not your child actually walks or bikes to/from school.*

13. How much FUN is walking or biking to/from school for your child? *(check one box)*

Very Fun	Fun	Neutral	Boring	Very Boring
☐	☐	☐	☐	☐

14. How HEALTHY is walking or biking to/from school for your child? *(check one box)*

Very Healthy	Healthy	Neutral	Unhealthy	Very Unhealthy
☐	☐	☐	☐	☐

15. (a) How many full years of regular school have you completed? _____ years
(grade school through graduate school)
(b) Your spouse/partner's education? *(if applicable)* _____ years

16. Please provide any additional comments below (use the back of this page, if needed):

_____

_____

_____

_____

Thank you for participating in this survey!

_____

Interested in Learning More?
If you are interested in discussing the conditions related to walking or biking to your child's school, please provide your contact information below (*Your name will not be associated with the results of this survey!*):

Name: _____

Email: _____

Address: _____

_____

Phone: _____

NEIGHBORHOOD SITE AUDIT FORM

NEIGHBORHOOD SITE AUDIT

The following neighborhood audit is designed to help you evaluate walking and bicycling conditions in your school's neighborhood by taking an inventory of intersections, streets and sidewalks. There are separate forms for evaluating intersections and mid-block crosswalks versus roadway segments. Please use only one form for each intersection or roadway segment. Make additional copies of the audit sheets to evaluate all of the neighborhood streets. Some information will need to be collected beforehand, such as average daily traffic counts provided by the local municipality and a base map of neighborhood streets.

Instructions:

Step 1: Establish a boundary for assessment:

On your base map, identify the school location and outline an area (or perimeter) from which children could walk or bicycle to school. A good rule of thumb is 1 mile in all directions from the school.

Step 2: Identify where students live:

On your base map, identify where students live. This could be done by having students mark their home locations on a large map with push pins, by using a GIS database (if available), or by using best estimates of parents and school staff.

Step 3: Identify projected walkable routes to the school:

Draw on the map and identify possible routes that children may follow to walk or ride their bikes to school. Try to identify a major route in each direction (north, south, east, west).

Step 4: Inventory of existing facilities:

Locate and inventory all major features within the one-mile radius. Locate streets, intersections, sidewalks, problem areas, and other security and safety items. Identify all of these items on the map with either text or symbols.

Step 5: Fieldwork:

Now, that you have completed the base mapping and initial analysis, it is time to go in the field. Using your initial analysis you can map an efficient course to evaluate all of the streets and major routes that you identified. Use the attached audit sheets to begin collecting information.

Step 6: Compile, prioritize and rank findings:

When your fieldwork is complete, organize your audits by highlighting the most important aspects noted by the audit team. List and rank these potential improvements in order of importance via safety and immediate need. Report the findings to the School Traffic Safety Team.

Walkability Checklist

How walkable is your community?

Take a walk with a child and decide for yourselves.

Everyone benefits from walking. These benefits include: improved fitness, cleaner air, reduced risks of certain health problems, and a greater sense of community. But walking needs to be safe and easy. Take a walk with your child and use this checklist to decide if your neighborhood is a friendly place to walk. Take heart if you find problems, there are ways you can make things better.

Getting started:

First, you'll need to pick a place to walk, like the route to school, a friend's house or just somewhere fun to go.

The second step involves the checklist. Read over the checklist before you go, and as you walk, note the locations of things you would like to change. At the end of your walk, give each question a rating. Then add up the numbers to see how you rated your walk overall.

After you've rated your walk and identified any problem areas, the next step is to figure out what you can do to improve your community's score. You'll find both immediate answers and long-term solutions under "Improving Your Community's Score..." on the third page.

Partnership for a Walkable America

Pedestrian and Bicycle Information Center

U.S. Department of Transportation

Take a walk and use this checklist to rate your neighborhood's walkability.

How walkable is your community?

Location of walk _____

_____

Rating Scale: 1 awful · 2 many problems · 3 some problems · 4 good · 5 very good · 6 excellent

1. Did you have room to walk?

☐ Yes ☐ Some problems:
- ☐ Sidewalks or paths started and stopped
- ☐ Sidewalks were broken or cracked
- ☐ Sidewalks were blocked with poles, signs, shrubbery, dumpsters, etc.
- ☐ No sidewalks, paths, or shoulders
- ☐ Too much traffic
- ☐ Something else _____

Locations of problems: _____

Rating: (circle one) 1 2 3 4 5 6

_____

_____

2. Was it easy to cross streets?

☐ Yes ☐ Some problems:
- ☐ Road was too wide
- ☐ Traffic signals made us wait too long or did not give us enough time to cross
- ☐ Needed striped crosswalks or traffic signals
- ☐ Parked cars blocked our view of traffic
- ☐ Trees or plants blocked our view of traffic
- ☐ Needed curb ramps or ramps needed repair
- ☐ Something else _____

Locations of problems: _____

Rating: (circle one) 1 2 3 4 5 6

_____

_____

3. Did drivers behave well?

☐ Yes ☐ Some problems: Drivers...
- ☐ Backed out of driveways without looking
- ☐ Did not yield to people crossing the street
- ☐ Turned into people crossing the street
- ☐ Drove too fast
- ☐ Sped up to make it through traffic lights or drove through traffic lights?
- ☐ Something else _____

Locations of problems: _____

Rating: (circle one) 1 2 3 4 5 6

_____

_____

4. Was it easy to follow safety rules? Could you and your child...

☐ Yes	☐ No	Cross at crosswalks or where you could see and be seen by drivers?
☐ Yes	☐ No	Stop and look left, right and then left again before crossing streets?
☐ Yes	☐ No	Walk on sidewalks or shoulders facing traffic where there were no sidewalks?
☐ Yes	☐ No	Cross with the light?

Locations of problems: _____

Rating: (circle one) 1 2 3 4 5 6

_____

_____

5. Was your walk pleasant?

☐ Yes ☐ Some unpleasant things:
- ☐ Needed more grass, flowers, or trees
- ☐ Scary dogs
- ☐ Scary people
- ☐ Not well lighted
- ☐ Dirty, lots of litter or trash
- ☐ Dirty air due to automobile exhaust
- ☐ Something else _____

Locations of problems: _____

Rating: (circle one) 1 2 3 4 5 6

_____

_____

How does your neighborhood stack up? Add up your ratings and decide.

1. _____
2. _____
3. _____
4. _____
5. _____

Total _____

26-30	Celebrate! You have a great neighborhood for walking.
21-25	Celebrate a little. Your neighborhood is pretty good.
16-20	Okay, but it needs work.
11-15	It needs lots of work. You deserve better than that.
5-10	It's a disaster for walking!

Now that you've identified the problems, go to the next page to find out how to fix them.

Now that you know the problems, you can find the answers.

Improving your community's score...

	What you and your child can do immediately	What you and your community can do with more time
1. Did you have room to walk?		
Sidewalks or paths started and stopped Sidewalks broken or cracked Sidewalks blocked No sidewalks, paths or shoulders Too much traffic	• pick another route for now • tell local traffic engineering or public works department about specific problems and provide a copy of the checklist	• speak up at board meetings • write or petition city for walkways and gather neighborhood signatures • make media aware of problem • work with a local transportation engineer to develop a plan for a safe walking route
2. Was it easy to cross streets?		
Road too wide Traffic signals made us wait too long or did not give us enough time to cross Crosswalks/traffic signals needed View of traffic blocked by parked cars, trees, or plants Needed curb ramps or ramps needed repair	• pick another route for now • share problems and checklist with local traffic engineering or public works department • trim your trees or bushes that block the street and ask your neighbors to do the same • leave nice notes on problem cars asking owners not to park there	• push for crosswalks/signals/parking changes/curb ramps at city meetings • report to traffic engineer where parked cars are safety hazards • report illegally parked cars to the police • request that the public works department trim trees or plants • make media aware of problem
3. Did drivers behave well?		
Backed without looking Did not yield Turned into walkers Drove too fast Sped up to make traffic lights or drove through red lights	• pick another route for now • set an example: slow down and be considerate of others • encourage your neighbors to do the same • report unsafe driving to the police	• petition for more enforcement • request protected turns • ask city planners and traffic engineers for traffic calming ideas • ask schools about getting crossing guards at key locations • organize a neighborhood speed watch program
4. Could you follow safety rules?		
Cross at crosswalks or where you could see and be seen Stop and look left, right, left before crossing Walk on sidewalks or shoulders facing traffic Cross with the light	• educate yourself and your child about safe walking • organize parents in your neighborhood to walk children to school	• encourage schools to teach walking safely • help schools start safe walking programs • encourage corporate support for flex schedules so parents can walk children to school
5. Was your walk pleasant?		
Needs grass, flowers, trees Scary dogs Scary people Not well lit Dirty, litter Lots of traffic	• point out areas to avoid to your child; agree on safe routes • ask neighbors to keep dogs leashed or fenced • report scary dogs to the animal control department • report scary people to the police • report lighting needs to the police or appropriate public works department • take a walk wih a trash bag • plant trees, flowers in your yard • select alternative route with less traffic	• request increased police enforcement • start a crime watch program in your neighborhood • organize a community clean-up day • sponsor a neighborhood beautification or tree-planting day • begin an adopt-a-street program • initiate support to provide routes with less traffic to schools in your community (reduced traffic during am and pm school commute times)
A Quick Health Check		
Could not go as far or as fast as we wanted Were tired, short of breath or had sore feet or muscles Was the sun really hot? Was it hot and hazy?	• start with short walks and work up to 30 minutes of walking most days • invite a friend or child along • walk along shaded routes where possible • use sunscreen of SPF 15 or higher, wear a hat and sunglasses • try not to walk during the hottest time of day	• get media to do a story about the health benefits of walking • call parks and recreation department about community walks • encourage corporate support for employee walking programs • plant shade trees along routes • have a sun safety seminar for kids • have kids learn about unhealthy ozone days and the Air Quality Index (AQI)

Need some guidance?
These resources might help...

Great Resources

WALKING INFORMATION

Pedestrian and Bicycle Information Center (PBIC)
UNC Highway Safety Research Center
730 Airport Road , Suite 300
Campus Box 3430
Chapel Hill, NC
27599-3430
Phone: (919) 962-2202
www.pedbikeinfo.org
www.walkinginfo.org

National Center for
Bicycling and Walking
Campaign to Make
America Walkable
1506 21st Street, NW
Suite 200
Washington, DC 20036
Phone: (800) 760-NBPC
www.bikefed.org

WALK TO SCHOOL DAY WEB SITES

USA event: www.walktoschool-usa.org
International: www.iwalktoschool.org

STREET DESIGN AND TRAFFIC CALMING

Federal Highway Administration
Pedestrian and Bicycle Safety Research Program
HSR - 20
6300 Georgetown Pike
McLean,VA 22101
www.fhwa.dot.gov/environment/bikeped/index.htm

Institute of Transportation Engineers
www.ite.org

Surface Transportation Policy Project
www.transact.org

Transportation for Livable Communities
www.tlcnetwork.org

WALKING COALITIONS

America Walks
P.O. Box 29103
Portland, Oregon 97210
Phone: (503) 222-1077
www.americawalks.org

Partnership for a Walkable America
National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143-3201
Phone: (603) 285-1121
www.nsc.org/walkable.htm

PEDESTRIAN SAFETY

National Highway Traffic Safety Administration
Traffic Safety Programs
400 Seventh Street, SW
Washington, DC 20590
Phone: (202) 662-0600
www.nhtsa.dot.gov/people/injury/pedbimot/ped

National SAFE KIDS Campaign
1301 Pennsylvania Ave. NW
Suite 1000
Washington, DC 20004
Phone: (202) 662-0600
Fax: (202) 393-2072
www.safekids.org

WALKING AND HEALTH

US Environmental Protection Agency
Office of Children's Health Protection (MC 1107A)
Washington, DC 20460
Phone: 202-564-2188
Fax: 202-564-2733
www.epa.gov/children/
www.epa.gov/airnow/
www.epa.gov/air/urbanair/ozone/what.html
www.epa.gov/sunwise/uvindex.html
www.epa.gov/otaq/transp/comchoic/ccweb.htm

President's Task Force on Environmental Health Risks and
Safety Risks to Children
www.childrenshealth.gov

Centers for Disease Control and Prevention
Division of Nutrition and Physical Activity
Phone: (888) 232-4674
www.cdc.gov/nccdphp/dnpa/readyset
www.cdc.gov/nccdphp/dnpa/kidswalk/index.htm

Prevention Magazine
33 East Minor Street
Emmaus, PA 18098
www.itsallaboutprevention.com

Shape Up America!
6707 Democracy Boulevard
Suite 306
Bethesda, MD 20817
www.shapeup.org

ACCESSIBLE SIDEWALKS

US Access Board
1331 F Street, NW
Suite 1000
Washington, DC 20004-1111
Phone: (800) 872-2253;
(800) 993-2822 (TTY)
www.access-board.gov

Bikeability Checklist

How bikeable is your community?

Riding a bike is fun!

Bicycling is a great way to get around and to get your daily dose of physical activity. It's good for the environment, and it can save you money. No wonder many communities are encouraging people to ride their bikes more often!

Can you get to where you want to go by bike?

Some communities are more bikeable than others: how does yours rate? Read over the questions in this checklist and then take a ride in your community, perhaps to the local shops, to visit a friend, or even to work. See if you can get where you want to go by bicycle, even if you are just riding around the neighborhood to get some exercise.

At the end of your ride, answer each question and, based on your opinion, circle an overall rating for each question. You can also note any problems you encountered by checking the appropriate box(es). Be sure to make a careful note of any specific locations that need improvement.

Add up the numbers to see how you rated your ride. Then, turn to the pages that show you how to begin to improve those areas where you gave your community a low score.

Before you ride, make sure your bike is in good working order, put on a helmet, and be sure you can manage the ride or route you've chosen. Enjoy the ride!

National Highway Traffic Safety Administration

Pedestrian and Bicycle Information Center

U.S. Department of Transportation

Go for a ride and use this checklist to rate your neighborhood's bikeability.

How bikeable is your community?

Location of bike ride (be specific): _____

Rating Scale: 1 awful; 2 many problems; 3 some problems; 4 good; 5 very good; 6 excellent

1. Did you have a place to bicycle safely?

a) On the road, sharing the road with motor vehicles?

☐ Yes ☐ Some problems (please note locations):
- ☐ No space for bicyclists to ride
- ☐ Bicycle lane or paved shoulder disappeared
- ☐ Heavy and/or fast-moving traffic
- ☐ Too many trucks or buses
- ☐ No space for bicyclists on bridges or in tunnels
- ☐ Poorly lighted roadways

Other problems: _____
_____

b) On an off-road path or trail, where motor vehicles were not allowed?

☐ Yes ☐ Some problems:
- ☐ Path ended abruptly
- ☐ Path didn't go where I wanted to go
- ☐ Path intersected with roads that were difficult to cross
- ☐ Path was crowded
- ☐ Path was unsafe because of sharp turns or dangerous downhills
- ☐ Path was uncomfortable because of too many hills
- ☐ Path was poorly lighted

Other problems: _____
_____

Overall "Safe Place To Ride" Rating: (circle one)

1 2 3 4 5 6

2. How was the surface that you rode on?

☐ Good ☐ Some problems, the road or path had:
- ☐ Potholes
- ☐ Cracked or broken pavement
- ☐ Debris (e.g. broken glass, sand, gravel, etc.)
- ☐ Dangerous drain grates, utility covers, or metal plates
- ☐ Uneven surface or gaps
- ☐ Slippery surfaces when wet (e.g. bridge decks, construction plates, road markings)
- ☐ Bumpy or angled railroad tracks
- ☐ Rumble strips

Other problems: _____
_____

Overall Surface Rating: (circle one)

1 2 3 4 5 6

3. How were the intersections you rode through?

☐ Good ☐ Some problems:
- ☐ Had to wait too long to cross intersection
- ☐ Couldn't see crossing traffic
- ☐ Signal didn't give me enough time to cross the road
- ☐ Signal didn't change for a bicycle
- ☐ Unsure where or how to ride through intersection

Other problems: _____
_____

Overall Intersection Rating: (circle one)

1 2 3 4 5 6

Continue the checklist on the next page...

4. Did drivers behave well?

☐ Yes ☐ Some problems, drivers:

- ☐ Drove too fast
- ☐ Passed me too close
- ☐ Did not signal
- ☐ Harassed me
- ☐ Cut me off
- ☐ Ran red lights or stop sign

Other problems: _____

_____

Overall Driver Rating: (circle one)

1 2 3 4 5 6

5. Was it easy for you to use your bike?

☐ Yes ☐ Some problems:

- ☐ No maps, signs, or road markings to help me find my way
- ☐ No safe or secure place to leave my bicycle at my destination
- ☐ No way to take my bicycle with me on the bus or train
- ☐ Scary dogs
- ☐ Hard to find a direct route I liked
- ☐ Route was too hilly

Other problems: _____

_____

Overall Ease of Use Rating: (circle one)

1 2 3 4 5 6

6. What did you do to make your ride safer?

Your behavior contributes to the bikeability of your community. Check all that apply:

- ☐ Wore a bicycle helmet
- ☐ Obeyed traffic signal and signs
- ☐ Rode in a straight line (didn't weave)
- ☐ Signaled my turns
- ☐ Rode with (not against) traffic
- ☐ Used lights, if riding at night
- ☐ Wore reflective and/or retroreflective materials and bright clothing
- ☐ Was courteous to other travelers (motorist, skaters, pedestrians, etc.)

7. Tell us a little about yourself.

In good weather months, about how many days a month do you ride your bike?

- ☐ Never
- ☐ Occasionally (one or two)
- ☐ Frequently (5-10)
- ☐ Most (more than 15)
- ☐ Every day

Which of these phrases best describes you?

- ☐ An advanced, confident rider who is comfortable riding in most traffic situations
- ☐ An intermediate rider who is not really comfortable riding in most traffic situations
- ☐ A beginner rider who prefers to stick to the bike path or trail

How does your community rate? Add up your ratings and decide.

(Questions 6 and 7 do not contribute to your community's score)

1. _____
2. _____
3. _____
4. _____
5. _____

Total _____

26-30	Celebrate! You live in a bicycle-friendly community.
21-25	Your community is pretty good, but there's always room for improvement.
16-20	Conditions for riding are okay, but not ideal. Plenty of opportunity for improvements.
11-15	Conditions are poor and you deserve better than this! Call the mayor and the newspaper right away.
5-10	Oh dear. Consider wearing body armor and Christmas tree lights before venturing out again.

Did you find something that needs to be changed?

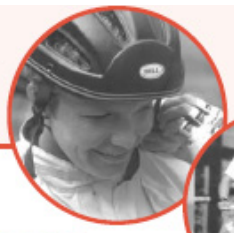
On the next page, you'll find suggestions for improving the bikeability of your community based on the problems you identified. Take a look at both the short- and long-term solutions and commit to seeing at least one of each through to the end. If you don't, then who will?

During your bike ride, how did you feel physically? Could you go as far or as fast as you wanted to? Were you short of breath, tired, or were your muscles sore? The next page also has some suggestions to improve the enjoyment of your ride.

Bicycling, whether for transportation or recreation, is a great way to get 30 minutes of physical activity into your day. Riding, just like any other activity, should be something you enjoy doing. The more you enjoy it, the more likely you'll stick with it. Choose routes that match your skill level and physical activities. If a route is too long or hilly, find a new one. Start slowly and work up to your potential.

Now that you know the problems, you can find the answers.

Improving your community's score...



	What you can do immediately	What you and your community can do with more time
1. Did you have a place to bicycle safely?		
a) On the road?		
No space for bicyclists to ride (e.g. no bike lane or shoulder; narrow lanes) Bicycle lane or paved shoulder disappeared Heavy and/or fast-moving traffic Too many trucks or buses No space for bicyclists on bridges or in tunnels Poorly lighted roadways	• pick another route for now • tell local transportation engineers or public works department about specific problems; provide a copy of your checklist • find a class to boost your confidence about riding in traffic	• participate in local planning meetings • encourage your community to adopt a plan to improve conditions, including a network of bike lanes on major roads • ask your public works department to consider "Share the Road" signs at specific locations • ask your state department of transportation to include paved shoulders on all their rural highways • establish or join a local bicycle advocacy group
b) On an off-road path or trail?		
Path ended abruptly Path didn't go where I wanted to go Path intersected with roads that were difficult to cross Path was crowded Path was unsafe because of sharp turns or dangerous downhills Path was uncomfortable because of too many hills Path was poorly lighted	• slow down and take care when using the path • find an on-street route • use the path at less crowded times • tell the trail manager or agency about specific problems	• ask the trail manager or agency to improve directional and warning signs • petition your local transportation agency to improve path/roadway crossings • ask for more trails in your community • establish or join a "Friends of the Trail" advocacy group
2. How was the surface you rode on?		
Potholes Cracked or broken pavement Debris (e.g. broken glass, sand, gravel, etc.) Dangerous drain grates, utility covers, or metal plates Uneven surface or gaps Slippery surfaces when wet (e.g. bridge decks, construction plates, road markings) Bumpy or angled railroad tracks Rumble strips	• report problems immediately to public works department or appropriate agency • keep your *eye* on the road/path • pick another route until the problem is fixed (and check to see that the problems are fixed) • organize a community effort to clean up the path	• work with your public works and parks department to develop a pothole or hazard report card or online link to warn the agency of potential hazards • ask your public works department to gradually replace all dangerous drainage grates with more bicycle-friendly designs, and improve railroad crossings so cyclists can cross them at 90 degrees • petition your state DOT to adopt a bicycle-friendly rumble-strip policy
3. How were the intersections you rode through?		
Had to wait too long to cross intersection Couldn't see crossing traffic Signal didn't give me enough time to cross the road The signal didn't change for a bicycle Unsure where or how to ride through intersection	• pick another route for now • tell local transportation engineers or public works department about specific problems • take a class to improve your riding confidence and skills	• ask the public works department to look at the timing of the specific traffic signals • ask the public works department to install loop-detectors that detect bicyclists • suggest improvements to sightlines that include cutting back vegetation; building out the path crossing; and moving parked cars that obstruct your view • organize community-wide, on-bike training on how to safely ride through intersections

Improving your community's score...

(continued)

	What you can do immediately	What you and your community can do with more time
4. Did drivers behave well?		
Drivers: Drove too fast Passed me too close Did not signal Harassed me Cut me off Ran red lights or stop signs	• report unsafe drivers to the police • set an example by riding responsibly; obey traffic laws; don't antagonize drivers • always expect the unexpected • work with your community to raise awareness to share the road	• ask the police department to enforce speed limits and safe driving • encourage your department of motor vehicles to include "Share the Road" messages in driver tests and correspondence with drivers • ask city planners and traffic engineers for traffic calming ideas • encourage your community to use cameras to catch speeders and red light runners
5. Was it easy for you to use your bike?		
No maps, signs, or road markings to help me find my way No safe or secure place to leave my bicycle at my destination No way to take my bicycle with me on the bus or train Scary dogs Hard to find a direct route I liked Route was too hilly	• plan your route ahead of time • find somewhere close by to lock your bike; never leave it unlocked • report scary dogs to the animal control department • learn to use all of your gears!	• ask your community to publish a local bike map • ask your public works department to install bike parking racks at key destinations; work with them to identify locations • petition your transit agency to install bike racks on all their buses • plan your local route network to minimize the impact of steep hills • establish or join a bicycle user group (BUG) at your workplace
6. What did you do to make your ride safer?		
Wore a bicycle helmet Obeyed traffic signals and signs Rode in a straight line (didn't weave) Signaled my turns Rode with (not against) traffic Used lights, if riding at night Wore reflective materials and bright clothing Was courteous to other travelers (motorists, skaters, pedestrians, etc.)	• go to your local bike shop and buy a helmet; get lights and reflectors if you are expecting to ride at night • always follow the rules of the road and set a good example • take a class to improve your riding skills and knowledge	• ask the police to enforce bicycle laws • encourage your school or youth agencies to teach bicycle safety (on-bike) • start or join a local bicycle club • become a bicycle safety instructor

5

Need some guidance?
These resources might help...

Great Resources

STREET DESIGN AND BICYCLE FACILITIES

American Association of State Highway and Transportation Officials
444 North Capitol Street, NW, Suite 249
Washington, DC 20001
Tel: (202) 624-5800
www.aashto.org

Institute of Transportation Engineers
1099 14th Street, NW, Suite 300 West
Washington, DC 20005-3438
Tel: (202) 289-0222
www.ite.org

Association of Pedestrian and Bicycle Professionals (APBP)
P.O. Box 23576
Washington, DC 20026
Tel: (202) 366-4071
www.apbp.org

Pedestrian and Bicycle Information Center (PBIC)
UNC Highway Safety Research Center
730 Airport Road, Suite 300
Campus Box 3430
Chapel Hill, NC 27599-3430
Tel: (919) 962-2202
www.pedbikeinfo.org
www.bicyclinginfo.org

Federal Highway Adminisrtation
400 Seventh Street, SW
Washington, DC 20590
www.fhwa.dot.gov/environment/bikeped/index.htm

EDUCATION AND SAFETY

National Highway Traffic Safety Administration
400 Seventh Street, SW
Washington, D.C. 20590
Tel: (202) 366-1739
www.nhtsa.dot.gov/people/injury/pedbimot/bike/

League of American Bicyclists
1612 K Street NW, Suite 401
Washington, DC 20006
Tel: (202) 822-1333
www.bikeleague.org

National Bicycle Safety Network
www.cdc.gov/ncipc/bike/default.htm

National Safe Kids Campaign
1301 Pennsylvania Ave NW, Suite 1000
Washington, DC 20004
Tel: (202) 662-0600
www.safekids.org

PATHS AND TRAILS

Rails to Trails Conservancy
1100 17th Street SW, 10th Floor
Washington, DC 20036
Tel: (202) 331-9696
www.railtrails.org

National Park Service
Rivers, Trails and Conservation Assistance Program
1849 C Street, NW, MS-3622
Washington, DC 20240
www.ncrc.nps.gov/rtca/rtca-ofh.htm

HEALTH

Centers for Disease Control and Prevention
Division of Nutrition and Physical Activity
4770 Buford Highway, NE
Atlanta, GA 30341-3724
www.cdc.gov/nccdphp/dnpa
Tel: (770) 488-5692

National Center for Injury Prevention and Control
Childhood Injury Prevention
4770 Buford Highway, NE
Atlanta, GA 30341
www.cdc.gov/ncipc

ADVOCACY AND USER GROUPS

Thunderhead Alliance
1612 K Street, NW, Suite 401
Washington, DC 20006
Tel: (202) 822-1333
www.thunderheadalliance.org

League of American Bicyclists
1612 K Street, NW, Suite 401
Washington, DC 20006
Tel: (202) 822-1333
www.bikeleague.org

National Center for Bicycling and Walking
1506 21st Street, NW, Suite 200
Washington, DC 20036
Tel: (202) 463-6622
www.bikewalk.org

Surface Transportation Policy Project
1100 17th Street, NW, 10th Floor
Washington, DC 20036
Tel: (202) 466-2636
www.transact.org

OTHER USEFUL RESOURCES

Bikes and transit: www.bikemap.com

Bicycle information: www.bicyclinginfo.org

Bicycle-related research:
www.tfhrc.gov/safety/pedbike/pedbike.htm

Bicycling Magazine: www.bicycling.com/

Bicycle touring:
Adventure Cycling Association
P.O. Box 8308
Missoula, MT 59807
(800) 755-2453
(406) 721-8754
www.adv-cycling.org

SCHOOL SITE AUDIT FORM

SCHOOL SITE AUDIT

The following site audit should be conducted to help determine walking and bicycling conditions on/adjacent to school property. This audit will help the school to discover potential areas for design improvements and increased safety. Members of the School Traffic Safety Team and the Principal should fill out the following audit during prime school hours in order to see how students get to and from school. Please take a map of the school grounds with you on the audit for orientation and note taking. If a map is unavailable please construct one as you go to help you identify areas for improvements later on in the safe routes to school process.

Date: _____ Day: _____ Time: _____ Weather Conditions: _____

1. Student Drop-Off Areas	**YES**	**NO**	**NA**
a. Are they designed so that students exiting or entering cars are protected from other vehicles?	☐	☐	☐
b. Do they have a continuous raised curb separating vehicles from pedestrians?	☐	☐	☐
c. Are there accessible curb ramps for wheel chair access?	☐	☐	☐
d. Do the ramps have tactile warning strips or textured concrete?	☐	☐	☐
e. Are there posted vehicular signs?	☐	☐	☐
f. Are there posted pedestrian signs?	☐	☐	☐
g. Is the area lighted?	☐	☐	☐
h. Does traffic seem to move freely without congestion and backup?	☐	☐	☐

i. Please describe additional problems within the student drop-off area in the space provided below.

2. Bus Loading Zones	YES	NO	NA
a. Are bus driveways physically separated from pedestrian and bicycling routes by raised curbs or bollards?	☐	☐	☐
b. Are bus driveways physically separated from parent pick-up/drop-off areas?	☐	☐	☐
c. If the buses are "double-stacked" for drop-off/loading areas, are measures taken for safety of students needing to cross in front or behind the bus?	☐	☐	☐
d. Is traffic in the bus loading zone one-way?	☐	☐	☐
e. Does the bus zone meet the minimum width of 24' for drop-off/pull-out lanes?	☐	☐	☐
f. Is there a continuous curb and sidewalk adjacent to the drop-off/loading area leading into the school site?	☐	☐	☐
g. Is the bus loading/unloading zone lighted?	☐	☐	☐
h. Please describe additional problem areas regarding the bus loading zone in the space provided below.			

3. Sidewalks and Bicycle Routes	YES	NO	NA
a. Are current pedestrian and bicycle routes separated from motor vehicles by the use of sidewalks or separated pathways?	☐	☐	☐
b. Are the bicycle routes designated by signage?	☐	☐	☐
c. Are marked bicycle lanes present?	☐	☐	☐
d. Are sidewalks and bicycle paths regularly maintained (free of debris, cracks and holes)?	☐	☐	☐
e. Are there accessible ramps for wheel chair access?	☐	☐	☐
f. Are the sidewalks continuous and without gaps?	☐	☐	☐
g. Do the ramps have tactile warning strips or textured concrete?	☐	☐	☐
h. Are the sidewalks lighted?	☐	☐	☐
i. Are the sidewalks used regularly?	☐	☐	☐
j. Please describe additional problem areas regarding the school's sidewalk system and existing bicycle routes in the space provided below.			

4. Adjacent Intersections (intersections near school property)	YES	NO	NA
a. Are there high volumes of automobile traffic?	☐	☐	☐
b. Are there high volumes of pedestrian traffic?	☐	☐	☐
c. Are there painted crosswalks for all crossing directions?	☐	☐	☐
d. Are there curb ramps located at all adjacent intersections?	☐	☐	☐
e. Is there appropriate vehicle signage?	☐	☐	☐
f. Is there traffic control, such as a stoplight or stop signs?	☐	☐	☐
g. Are there pedestrian walk signals?	☐	☐	☐

h. Please describe additional problem areas regarding these intersections in the space provided below.

5. Sight Distance (clear views between motorists and pedestrians)	YES	NO	NA
a. Are desirable sight distances (visibility is free of obstructions) provided at all intersections within the walking zone?	☐	☐	☐
b. Do cars park or wait blocking the vision of other motorists, bicyclists and pedestrians?	☐	☐	☐
c. Have the placement of fences, walls, dumpsters and the location of parking areas for service vehicles been carefully considered in view of sight distance requirements on the school site?	☐	☐	☐
d. Are there any barriers present that block the viewing of pedestrians and bicyclists (i.e. dumpsters, utility boxes, landscaping, parking areas, ground mounted signage, building walls)?	☐	☐	☐

e. Please describe additional problem areas that have sight distance obstructions in the space provided below.

6. Traffic Signs, Speed Control, Signals and Pavement Markings	YES	NO	NA
a. Are there any School Advance signs, School Crossing signs, School Speed Limit signs, flashing beacons, and No Parking or No Standing signs?	☐	☐	☐
b. Is there an effective school targeted program of traffic enforcement?	☐	☐	☐
c. Is there a designated school zone?	☐	☐	☐
d. Are there any school pavement markings located on roadways adjacent to or in the vicinity of the school grounds?	☐	☐	☐
e. Are there currently traffic/speed control measures used, such as different pavement surfaces, non-white paint, speed bumps, and speed tables?	☐	☐	☐

f. Please describe additional information regarding adjacent traffic signs, speed control, signals and pavement markings in the space provided below.

APPENDIX C:
GALLERY OF ENGINEERING MEASURES FOR SRTS PROGRAM

TABLE C-1: POTENTIAL ENGINEERING MEASURES BENEFITING PEDESTRIANS

MEASURE	OBJECTIVE							
	Reduce Speed of Motor Vehicles	Improve Sight Distance	Reduce Volume of Motor Vehicles	Reduce Exposure for Pedestrians	Improve Pedestrian Access and Mobility	Encourage Walking by Improving Aesthetics	Improve Compliance with Traffic Laws	Eliminate Behaviors that Lead to Crashes
ROADWAY DESIGN								
Bicycle Lanes	●	●						
Roadway Narrowing	●			●				
Lane Reduction	●		●	●				
Driveway Improvements	●							
Curb Radius Reduction	●							
Raised Medians				●	●	●		
INTERSECTION DESIGN								
Roundabouts	●							
PEDESTRIAN FACILITY DESIGN								
Marked Crosswalks and Enhancements		●			●	●		
Roadway Lighting Improvements		●						
Pedestrian Overpass/Underpass				●	●			
Sidewalks and Walkways					●			
Curb Ramps					●			
Crossing Islands				●	●			
TRAFFIC CALMING								
Curb Extensions	●	●		●				
Chokers	●			●	●		●	●
Chicanes	●						●	●
Mini-Circles	●						●	●
Speed Humps/Speed Table	●	●					●	●
Raised Intersections	●	●						
Raised Pedestrian Crossings	●	●						
Landscaping	●	●				●		
Specific Paving Treatments	●	●				●		

TABLE C-1: POTENTIAL ENGINEERING MEASURES BENEFITING PEDESTRIANS (Continued)

MEASURE	OBJECTIVE							
	Reduce Speed of Motor Vehicles	Improve Sight Distance	Reduce Volume of Motor Vehicles	Reduce Exposure for Pedestrians	Improve Pedestrian Access and Mobility	Encourage Walking by Improving Aesthetics	Improve Compliance with Traffic Laws	Eliminate Behaviors that Lead to Crashes
TRAFFIC MANAGEMENT								
Diverters			●					
Full/Partial Street Closure			●					
SIGNALS AND SIGNS								
Traffic Signals					●		●	
Traffic Signal Enhancements	●				●			
Pedestrian Signals				●	●			●
Pedestrian Signal Timing				●	●			
Signing	●	●						
OTHER MEASURES								
School Zone Improvements	●							
Speed Monitoring Trailer	●						●	
Pedestrian/Driver Education							●	●
Police Enforcement							●	

TABLE C-2: POTENTIAL ENGINEERING MEASURES BENEFITING BICYCLISTS

MEASURE	OBJECTIVE						
	Provide safe on-street facilities/ space for bicyclists	Provide off-road paths or trails for bicyclists	Provide and maintain quality surfaces for bicyclists	Provide safe intersections for bicyclists	Improve motorist behavior and compliance with traffic laws	Improve bicyclist behavior and compliance with traffic laws	Encourage and support bicycling
SHARED ROADWAY							
Roadway Surface Improvements	●		●			●	●
Bridge/Overpass Access	●		●			●	●
Tunnel/Underpass Access	●		●			●	●
Lighting Improvements	●			●	●		●
Parking Treatments	●			●	●	●	
Median/Crossing Island	●						●
Driveway Improvements	●						
Access Management	●						
Reduce Lane Number	●						
Reduce Lane Width	●			●	●		
ON-ROAD BIKE FACILITIES							
Bike Lanes	●					●	●
Wide Curb Lanes	●						
Paved Shoulders	●						●
TRAILS/SHARED-USE PATHS							
Separate Shared-Use Path		●					●
Path Intersection Treatments		●		●		●	
Intersection Warning Treatments		●		●		●	
Share the Path Treatments		●				●	
INTERSECTION TREATMENTS							
Curb Radii Revisions				●	●		
Roundabouts				●	●		
Intersection Markings				●	●	●	
Sight Distance Improvements				●	●	●	
Turning Restrictions				●			

TABLE C-2: POTENTIAL ENGINEERING MEASURES BENEFITING BICYCLISTS (Continued)

MEASURE	OBJECTIVE						
	Provide safe on-street facilities/ space for bicyclists	Provide off-road paths or trails for bicyclists	Provide and maintain quality surfaces for bicyclists	Provide safe intersections for bicyclists	Improve motorist behavior and compliance with traffic laws	Improve bicyclist behavior and compliance with traffic laws	Encourage and support bicycling
TRAFFIC CALMING							
Mini Traffic Circles	●			●	●	●	
Chicanes	●			●	●		
Speed Table and Speed Humps	●			●	●		
Visual Narrowing	●				●		
Traffic Diversion	●				●		
Raised Intersection	●			●	●		
MARKINGS, SIGNS, SIGNALS							
Sign Improvements	●	●		●	●	●	
Pavement Marking Improvements	●	●	●	●	●	●	
School Zone Improvements	●			●	●	●	●
Install Signal/Optimize Timing							
Bike-Activated Signal				●		●	●
MAINTENANCE							
Repetitive/Short-Term Maintenance	●	●	●		●	●	●
Major Maintenance	●	●	●		●	●	●
Hazard Identification Program	●	●	●		●	●	●
EDUCATION AND ENFORCEMENT							
Practitioner Education	●	●	●	●			●
Bicyclist Education	●	●				●	●
Motorist Education					●		●
Law Enforcement						●	
SUPPORT FACILITIES AND PROGRAMS							
Landscaping	●	●					●
Bike Maps					●	●	●
Events/Activities					●	●	●
Bike Parking							●
Transit Access							●

TOOLS TO ENHANCE THE PEDESTRIAN ENVIRONMENT: SIDEWALKS

Tools to Enhance the Pedestrian Environment: *Sidewalks*

Description:

Paved walkways that clearly delineate that area of the public right-of-way for pedestrian use. Sidewalks can either be placed flush with the roadside edge (if a curb is provided) or next to a buffer area (planting strip) located between the sidewalk and roadside.

Typically, sidewalks in residential or low-density commercial areas vary in width from 4 to 8 feet. If a planted strip is provided between the sidewalk and the curb, it should be at least 2 feet wide to allow for maintenance activities.

Example of a well designed sidewalk with buffer area and ADA-compliant curb ramps.

Effectiveness:

In residential and mixed residential areas, pedestrian crashes were more than 2 times as likely to occur at locations without sidewalks than would be expected on the basis of exposure; residential areas with no sidewalks had 23% of all pedestrian–vehicle crashes and only 3% of exposures; commercial areas with no sidewalks were only slightly more hazardous than commercial areas with sidewalks.

SOURCE: Knoblauch RL, Tustin BH, Smith SA, Pietrucha MT. *Investigation of Exposure-Based Pedestrian Accident Areas: Crosswalks, Sidewalks, Local Streets, and Major Arterials.* Washington, DC: US Dept of Transportation; 1987. DOT publication FHWA-RD-87-038.

Estimated Costs:

Costs vary depending on such factors as width and materials but are estimated at about $15 per linear foot. Based on recent bids for MDT projects, the cost of sidewalks (4" to 6" thickness) ranged from $45 to $50 per square yard.

SOURCES: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.
MDT Contract Plans Bureau, *Average Prices Catalog*, January 2006 to June 2006 Edition.

Considerations:

- Sidewalks need to be planned and design to ensure functionality and continuity.
- Sidewalks need to comply with ADA requirements.
- An adequate buffer should be provided between the sidewalk and road, such as a planting strip, bicycle lane and/or on-street parking.
- Sidewalks are not generally acceptable for bicycle use and should not be specifically designated for bicycle use.

Evaluation Measures:	Frequency and percent of walking along the roadway crashes Pedestrian volume counts

TOOLS TO ENHANCE THE PEDESTRIAN ENVIRONMENT: STREET LIGHTING

Tools to Enhance the Pedestrian Environment: *Street Lighting*

Description:

Lighting along streets and roadways, especially at crosswalks, serves several purposes. Adequate lighting provides improved motorist visibility and enhances pedestrian safety and comfort. It reduces crashes by helping drivers obtain sufficient visual information. Finally, street lighting supplements vehicle headlights, when warranted. Street lighting can also help enhance the appearance of neighborhoods and be a deterrent to crime.

www.pedbikeimages.org/ ITE Pedestrian Bicycle Council

Effectiveness:

A 1996 FHWA report showed that installing lighting has the highest benefit-cost ratio of all safety improvements. Specifically, for each dollar spent, $26.80 was saved in reducing fatalities and injuries in vehicle crashes from 1974-1995. In addition, a recent FHWA report entitled *Pedestrian Facilities Users Guide* identifies roadway lighting as the only countermeasure that can address all types of pedestrian crashes.

Estimated Costs:

Costs vary widely depending on materials used, lighting design, utility service agreements and other factors. However, a general cost estimate is $2,000 to $3,000 per streetlight.

SOURCE: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.

Considerations:

- Lighting systems have substantial installation costs and there are ongoing operation and maintenance costs.
- It is best to place streetlights along both sides of arterial streets and to provide a consistent level of lighting along a roadway.
- Mercury vapor, incandescent, or less expensive high-pressure sodium lighting is often preferred as pedestrian-level lighting. Low-pressure sodium lights are low energy, but have a high level of color distortion.
- Lighting improvements are not specifically identified as eligible infrastructure projects under MDT's SRTS program. Other funding sources would likely need to be pursued.

Evaluation Measures:	Number of nighttime pedestrian crashes Percentage of all pedestrian crashes that occur at night Increased pedestrian activity

ENHANCE THE PEDESTRIAN/BICYCLING ENVIRONMENT: SEPARATED SHARED USE PATHS AND TRAILS

Enhance the Pedestrian/Bicycling Environment: *Separated Shared Use Paths and Trails*

Description:

Shared use paths and trails are physically separated from motor vehicle traffic (except at crossings with streets) and are built either within an independent right-of-way (such as a utility or railroad right-of-way), or along specially acquired easements across private lands. Shared use paths and trails cater to a variety of users, including bicyclists, pedestrians, joggers, rollerbladers, and horseback riders.

Effectiveness:

The presence of paths can increase the number of walking and bicycling trips made and decrease the time and distance it takes to travel from one point to another.

Estimated Costs:

Costs vary by project conditions and scope. Acquiring right-of-way can significantly affect the total cost of project, particularly if private easements must be purchased to develop the path or trail.

Considerations:

- Paths are seldom used exclusively by one type of user. In most cases, it must be assumed that paths will be shared by all types of users of all ages and abilities. These different users have different objectives, which can result in conflict.
- Provide signs to show pedestrians and bicyclists how to access the path network and where it leads.
- Path design should incorporate appropriate width and/or number of lanes for anticipated pedestrian and bicycle traffic.
- Paths should connect frequently visited origins and destinations.
- Consideration should be given to lighting, maintenance, and safety requirements.
- Acquiring easements can be challenging and costly.
- Isolated trails could pose a security concern.

Evaluation Measures:	Pedestrian and bicycle volumes

ENHANCE THE PEDESTRIAN/BICYCLING ENVIRONMENT: GRADE SEPARATED CROSSINGS

Enhance the Pedestrian/Bicycling Environment: *Grade Separated Crossings*

Description:

Pedestrian and bicycle bridges and underpasses separate pedestrians and bicyclists from vehicular traffic and allow for safe, uninterrupted pedestrian and bicycle traffic flow. They are most appropriate for crossing high-speed, high-volume streets and roads or rail-lines or topographical features posing barriers to walking and biking. The bridge at right is located in Missoula.

Effectiveness:

The effectiveness depends largely on the likelihood that they will be used by pedestrians and bicyclists as an alternative to at-grade crossings. Grade separated crossings improve pedestrian safety, while reducing vehicle delay and accidents, and increasing highway capacity when appropriately located and designed. Such structures eliminate impediments to through pedestrian and bicycle travel and improves accessibility and network connectivity.

Estimated Costs:

Costs range from $500,000 to $4 million, depending on required right-of-way acquisition and site characteristics.

Considerations:

- Both bridges and underpasses should be accessible to all pedestrians
- Underpasses work best when they can be designed to feel open, well-lit, and safe
- Bridges are best suited in areas where the topography allows for a structure without ramps.
- Bridges and underpasses will not be used if a more direct route is available
- Fencing may be needed to channel pedestrians and bicyclists to the bridge or underpass.
- Cost for implementation and on-going maintenance may be a concern.

Evaluation Measures:	Number or percent of pedestrian and bicycle crashes Changes in probability of being involved in a crash once treatment is in use

TOOLS FOR STREET CROSSINGS: MARKED CROSSWALKS

Tools for Street Crossings: *Marked Crosswalks*

Description:

Marked crosswalks are painted pedestrian crossings at intersections or mid-block locations that specify proper locations for pedestrians to cross the street. Crosswalk locations are frequently enhanced with raised islands, traffic and pedestrian signals, speed restrictions, and street lighting.

Providing crosswalks that are very visible helps remind drivers that these are important pedestrian crossings. High visibility crosswalks listed in the MUTCD include ladder and diagonal markings.

Photo from SRTS Guide

Effectiveness:

Properly placed marked crosswalks can encourage pedestrians to walk at preferred crossing locations while increasing the visibility of a pedestrian crossing and driver awareness. There is no proven reduction in pedestrian crashes resulting from marking crosswalks alone, without adding other more substantial crossing treatments such as raised medians, traffic and pedestrian signals or improved nighttime lighting.

Estimated Costs:

Costs range from $100 for a regular striped crosswalk to $300 for a ladder crosswalk to $3,000 for a patterned concrete crosswalk. Maintenance costs should also be considered based on the paint material used. High, $50,000-$75,000 for mid-block crossings, depending on the width of the street and the length of the mast-arm poles.

SOURCE: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.

Considerations:

- Locations chosen to have marked crosswalks should be convenient, accessible, and in the direct pedestrian route. For more information see the most recent edition of the ITE *Traffic Control Devices Handbook*.
- Crosswalk markings must be placed so that the curb ramp is within the crosswalk.
- Crosswalks are eligible infrastructure projects under MDT's SRTS Program.

Evaluation Measures:	Reduction in motor vehicle conflicts and increase in pedestrian activity within the crosswalk.

TOOLS FOR STREET CROSSINGS: TRAFFIC SIGNALS

Tools for Street Crossings: *Traffic Signals*

Description:

Traffic signals that control the flow of traffic and provide sufficient time for safe and efficient pedestrian crossings.

Effectiveness:

When signals are installed at appropriate locations (i.e. where warranted) they should improve pedestrian safety and also reduce the severity of motor vehicle crashes, even though total vehicle crashes (e.g. including rear-end collisions) may increase. Research is limited on the effect of traffic signals on pedestrian crashes, although some pedestrian signal timing schemes have been shown to significantly reduce pedestrian crash risk.

Estimated Costs:

Costs for traffic signals range from $30,000 to $140,000. Electric bills and routine maintenance could cost about $3,000 a year.

SOURCE: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.

Considerations:

- Signal cycles should be kept short
- Marked crosswalks encourage pedestrians to cross at the signal.
- Pedestrian actuation (pushbuttons) should only be used if the pedestrian volume is low enough to support it
- Potential traffic diversion to adjacent streets.
- Traffic signals are not eligible for funding under MDT's SRTS Program.

Evaluation Measures:	Motor vehicle-pedestrian crashes Pedestrian ability to complete their crossing before the steady DON'T WALK is displayed Signal compliance of pedestrians

TOOLS FOR STREET CROSSINGS: PEDESTRIAN PUSHBUTTONS FOR TRAFFIC SIGNALS

Tools for Street Crossings: *Pedestrian Pushbuttons for Traffic Signals*

Description:

Electronic buttons used by pedestrians to change traffic signal timing to accommodate pedestrian crossings. Pedestrian pushbuttons are applicable at locations where there are significant numbers of pedestrians or where actuated signals do not automatically allocate sufficient pedestrian crossing time during all phases unless a pedestrian is present.

*www.pedbikeimages.org/*ITE Pedestrian Council

Effectiveness:

Pedestrian pushbuttons improve pedestrian travel time and compliance with crossing signals, provide feedback to pedestrians about the operation of traffic signals, and reduce delays to vehicular traffic when pedestrians are not present.

Estimated Costs:

Costs range from $400 to $1,000 per pushbutton.

SOURCE: Metropolitan Transportation Commission website. Planning: Bicycle/Pedestrians Safety Toolbox, Engineering, Pedestrian pushbuttom treatments. Available at: http://www.mtc.ca.gov/planning/bicyclespedestrians/tools/pedPushbutton/index.htm. Accessed: January 3, 2007.

Considerations:

- Pedestrian actuation (pushbuttons) should only be used if the pedestrian volume is low enough to support it.
- Must be well signed, easily locatable and within reach of all pedestrians.
- Visually impaired pedestrians may have difficulty determining if a pushbutton is present so it may be necessary to use sounds to help identify the location of the pushbutton.
- Buttons for neighboring crosswalks should be located at least 10 feet from each other.
- Adding pedestrian push buttons to traffic signals are not eligible for funding under MDT's SRTS Program.

Evaluation Measures:	Pedestrian volumes Pedestrian compliance to WALK/DON'T WALK signal

TOOLS FOR STREET CROSSINGS: COUNTDOWN PEDESTRIAN SIGNALS

Tools for Street Crossings: *Countdown Pedestrian Signals*

Description:

The device consists of a standard pedestrian signal with standard shapes and color, with an added display that counts down the seconds remaining for a pedestrian crossing. The countdown timer starts either at the beginning of the pedestrian phase or at the beginning of the flashing DON'T WALK indication. The timer continues counting down through the interval set for pedestrian crossings.

Effectiveness:

Pedestrian countdown signals may reduce the number of pedestrians caught in the crosswalk when the crossing cycle ends.

Estimated Costs:

The average purchase price for the countdown timers ranges from $300 to $800 per signal.

SOURCE: Metropolitan Transportation Commission website. Planning: Bicycle/Pedestrians Safety Toolbox, Engineering, Countdown Signals. Available at: http://www.mtc.ca.gov/planning/bicyclespedestrians/tools/pedPushbutton/index.htm. Accessed: January 3, 2007.

Considerations:

- The countdown signals are more applicable where pedestrians are crossing streets with multiple lanes in each direction.
- For wide streets, countdown pedestrian signals may be of particular benefit, especially if there are a substantial number of older pedestrians or persons with mobility disabilities who cross.
- Countdown signals are not accessible to pedestrians with impaired vision.
- Signals should be easily visible from both sides of crosswalks.
- Countdown pedestrian signals are not eligible for funding under MDT's SRTS Program.

Evaluation Measures:	Number of pedestrians caught in the crosswalk when the cycle ends Opinions from pedestrians about perceived safety with the devices

TOOLS FOR STREET CROSSINGS: CURB EXTENSIONS (CURB BULBS/BULB-OUTS)

Tools to Reduce Crossing Distances: *Curb Extensions (Curb Bulbs/Bulb-outs)*

Description:

Curb extensions narrow the distance of the road that a pedestrian must cross by extending the sidewalk and curb area across the parking lanes. Curb extensions are commonly referred to as curb bulbs or curb bulb-outs.

Curb Bulbouts in Bozeman.

Effectiveness:

Curb extensions increase pedestrian visibility and decrease pedestrian exposure distance in the street. These features also reduce pedestrian crossing time and vehicle turn speeds. Vehicles cannot park in or too near crosswalks if curb extensions are properly designed.

Estimated Costs:

Costs vary widely, ranging from $2,000 to $20,000 per extension, depending on details of design, drainage and movement or removal of utility poles or controller boxes.

SOURCE: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.

Considerations:

- This treatment is used in areas with high pedestrian activity where there is a need to shorten crossing distances and improve the visibility of pedestrians.
- Curb extensions work best when installed on streets that have on-street parking (parallel, diagonal or perpendicular).
- Drainage along the street may be an issue at some locations.
- Adequate lighting is needed to keep motorists from running into the curb extension.
- Curb extensions should be designed to accommodate large vehicles and bicycles, as appropriate.

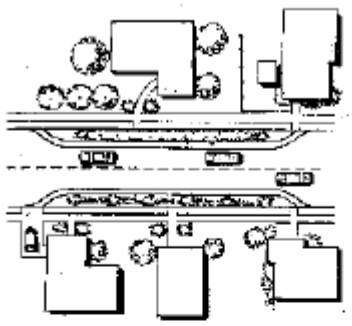
Evaluation Measures:	Number of crashes involving pedestrians Severity of crashes Speeds of through and right-turning motor vehicles

TOOLS TO SLOW DOWN TRAFFIC: CHOKERS

Tools to Slow Down Traffic: *Chokers*

Description:

Chokers are curb extensions at mid-block or intersection corners that narrow a street by extending the sidewalk or widening the planting strip. The resulting cross-section can be two narrow lanes or a single lane. Chokers also provide an opportunity for adding landscaping along the street.



Street section with Mid-block Chokers (ITE)

Effectiveness:

Limited data is available on the effect of chicanes on speed, volume, and collisions, but this treatment is implemented based on the assumption that it will benefit pedestrians by slowing motor vehicle traffic, reducing the number of severe crashes and increasing safety. ITE's Traffic Calming Library indicates two-lane chokers may reduce travel speeds by 4 percent and and 14 percent for one lane chokers.

SOURCE: Institute of Traffic Engineers website. Techincal Information, Traffic Calming, Calming Measures-Choker. Available at: http://www.ite.org/traffic/choker.htm. Accessed: January 4, 2007.

Estimated Costs:

Costs for chokers range from $5,000 to $20,000, depending on site conditions and landscaping additions. Drainage and utility relocation often represent a significant portion of the cost for chokers.

SOURCE: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.

Considerations:

- Designs for chokers must ensure adequate drainage from the roadway.
- Vertical delineators, bollards or object markers may be needed to make chokers visible to snowplow operators.
- Chokers are preferred by many emergency response agencies over most other traffic calming measures.

Evaluation Measures:	Motor vehicle speed data

TOOLS TO SLOW DOWN TRAFFIC: CHICANES

Tools to Slow Down Traffic: *Chicanes*

Description:

Chicanes are sidewalk extensions that alternate from one side of a street to the other requiring motorists to travel a winding route. Chicanes can also be created by alternating on-street parking or plantings between one side of the street and the other. Chicanes are appropriate for mid-block locations only and most effective when similar traffic volumes exist on both approaches.

Chicane *www.pedbikeimages.org*

Effectiveness:

The undulating path motorists are required to follow interrupts any clear view ahead and compels drivers to slow down. Few formal evaluations have been performed, but this treatment is implemented based on the assumption that it will benefit pedestrians by slowing motor vehicle traffic, reducing the number of severe crashes and increasing safety. Chicanes may also be a measure that can help reduce cut-through traffic.

Estimated Costs:

Costs for landscaped chicanes range from $10,000 (for a set of three chicanes) on an asphalt street to up to $30,000 on a concrete street. Drainage and utility relocation often represent a significant portion of the cost for chicanes.

SOURCE: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.

Considerations:

- Chicanes must be designed carefully to discourage drivers from straying out of their appropriate lanes.
- Curb realignment and landscaping can be expensive, particularly if storm drainage issues are present.
- Some on-street parking could be lost due to the installation of chicanes.
- High-visibility signage and pavement legends may be needed in advance of the chicane.

Evaluation Measures:	Motor vehicle speed data

TOOLS TO SLOW DOWN TRAFFIC: SPEED HUMPS

Tools to Slow Down Traffic: *Speed Humps*

Description:

Speed humps are elongated sections of raised pavement designed to reduce motor vehicle speeds. Longer and flatter speed humps are referred to as speed tables rounded raised areas Speed humps are typically 12 to 14 feet in length (in the direction of travel), making them distinctly different from the shorter "speed bumps" often found in parking lots. Speed bumps are often placed in a series (typically spaced 300 to 600 feet apart).

Photo: FHWA

Effectiveness:

Speed humps are very effective at reducing speeds. Studies suggest that speed humps 12-14 feet in length can reduce 85th-percentile speeds by an average of more than 20 percent and that a notable decrease in the total number of accidents can be expected.

SOURCE: Fehr and Peers Transportation Consultants – TrafficCalming.org website. Types of Measures – Speed Humps. Available at: http://www.trafficcalming.org/speedhumps.html. Accessed: January 4, 2007.

Estimated Costs:

Speed humps cost approximately $1,000 to $2,000 each. Speed tables range from $2,000 to $15,000 each.

SOURCE: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.

Considerations:

- Speed humps should not typically be used on major roads, bus routes, or primary emergency response routes and not on roadways with grades that exceed 8 percent. They should also be placed at mid-block locations and not at intersections or on curves.
- Large vehicles, like emergency vehicles and others with rigid suspension, must travel at slower speeds. This may be a significant issue with local emergency services providers.
- Speed humps may inhibit snow plowing and resurfacing efforts.
- ITE's Recommended Practice entitled *Guidelines for the Design and Application of Speed Humps* provides additional information regarding the use of this treatment.

Evaluation Measures:	Number of crashes and motor vehicle/pedestrian conflicts Motor vehicle speed and motorist delay

TOOLS TO SLOW DOWN TRAFFIC: NEIGHBORHOOD TRAFFIC CIRCLES

Tools to Slow Down Traffic: *Neighborhood Traffic Circles*

Description:

Traffic circles are relatively small circular or oval islands (usually landscaped) placed at the center of intersections of local and/or collector streets. Their primary purpose is to reduce speeds through an intersection or, if used in a series, reduce speeds for several blocks. Traffic circles are different than roundabouts.

Neighborhood traffic circle in Missoula

Effectiveness:

Studies suggest that neighborhood traffic circles can decrease 85th-percentile speeds by more than 10 percent and that a notable decrease in the total number of accidents can be expected.

SOURCE: Fehr and Peers Transportation Consultants – TrafficCalming.org website. Types of Measures – Neighborhood Traffic Circles. Available at: http://www.trafficcalming.org/trafficcircles.html. Accessed: January 4, 2007.

Estimated Costs:

The cost for a landscaped traffic circle on an asphalt street is about $6,000 and could approach $12,000 for a landscaped traffic circle on a concrete street.

SOURCE: PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System* September, 2004. FHWA-SA-04-003 U.S. Department of Transportation Federal Highway Administration.

Considerations:

- Although landscaping in traffic circles can enhance neighborhood aesthetics, it should be designed to ensure adequate sight distance at the intersection.
- They must be designed so that the circulating lane does not encroach on the crosswalks.
- Maintaining landscaping in traffic circles becomes a responsibility of the local government or neighborhood residents.
- Traffic circles should be designed with consideration of the needs of large vehicles including emergency services vehicles.

Evaluation Measures:	Crashes and injury severity Motor vehicle speed data